This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

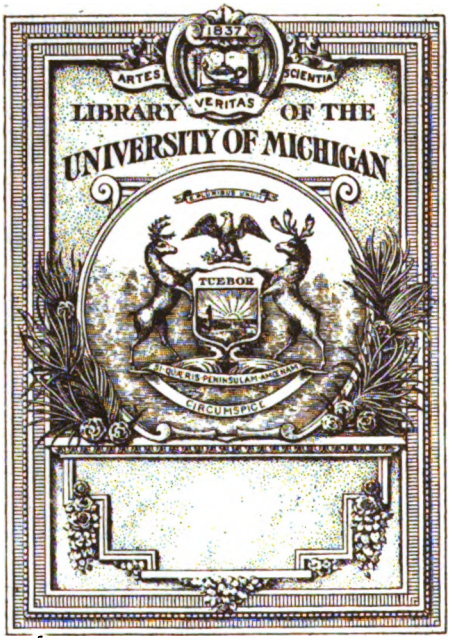
+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

B 49993 5

Digitized by Google



THE GIFT OF
Vermont St. Bd. of Health

Digitized by Google

614.09
V.2 k

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

S 1C4. 0779
V 2 6

Bulletin No. 1, Volume VI.

Issued Quarterly by

Vermont State Board of Health,

September 1, 1905.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS:

Introductory Remarks at the Opening of the Seventh Annual School for Health Officers, by Charles S. Caverly, M. D.

Address of Rt. Rev. John S. Michaud, Bishop of Burlington.

The Newspaper in its Relation to Public Health, by Frank L. Greene.

School Sanitation, by Hon. Walter R. Ranger.

Examination of Eyes and Ears of School Children, by George H. Gorham, M. D., Bellows Falls, Vt.

To the School Teachers of Vermont, by Dr. Charles S. Caverly.

Food Inspection Under Our Food Law, by C. P. Moat.

Filtration of Water, by H. W. Clark.

The Use of Copper in the Purification of Water, by Alvah H. Doty, M. D., Staten Island, N. Y.

News Items.

BRATTLEBORO, VT.

1905

Digitized by Google

Digitized by Google

INTRODUCTORY REMARKS AT THE OPENING OF THE SEVENTH ANNUAL SCHOOL OF INSTRUCTION FOR HEALTH OFFICERS, MONDAY EVENING, JUNE 19, 1905.

CHARLES S. CAVERLY, M. D., PRESIDENT OF THE STATE BOARD OF HEALTH.

Health Officers of Vermont, Ladies and Gentlemen:—For the seventh time, in behalf of the State Board of Health, it is my duty to welcome you here to our annual school of instruction for health officers. This "school of instruction" is a Vermont institution. The health officer as a legal officer is really a new feature among the officials in this state. The State Board of Health is likewise; and public health laws are more or less of an innovation.

The State Board of Health, established in 1886, during the first six years of its existence made an effort to get local representatives in the various towns of the state who would serve voluntarily, and who would as volunteer health officers, keep the State Board informed as to local sanitary conditions, and who would do all in their power to secure the enforcement of the public health laws then on the statute books. It goes without saying that the volunteer health officer—who had no legal standing—accomplished comparatively little, although some enthusiastic helpers under these conditions did very good service, and did a great deal to promote the health legislation that came later. In 1892, by an act of the legislature, the health officer became a legal officer, and was recognized in the statutes of the state. The statute which gave authority to the State Board of Health, also defined quite extensively the powers and duties and compensation of those officers. The health officer from that time for the next six years became more and more a useful citizen, and a useful officer for most of our towns. At the same time it was apparent to the State Board that the laws in regard to public health were not as uniformly and energetically enforced as they might be— particularly not *uniformly enforced.* There were, here and there, health officers who did intelligent and strenuous work along these lines, and made every effort—though they were somewhat exceptional.

In 1898, as you know, the legislature established our Laboratory of Hygiene. That was a *very* decided step—perhaps the most decided step that has ever been taken in this state in the way of promoting good health, in the way of improving sanitary conditions all over the state.

Dr. Linsley who was the first director of the Laboratory, conceived the idea of calling the health officers of the state together for the purpose of study as well as conference, and, so far as I know, that was the first school of that kind that had ever been held in this country, or anywhere else. The first sessions, as you who were present and health officers at that time

Digitized by Google

remember, were in a way really schools—schools of instruction. The sessions, for the first two years, were held in the Laboratory, and the Doctor and his assistants gave us all instruction in chemistry and biology. The use and the usefulness of this school of instruction became at once apparent; it struck a responsive chord in our hearts here in Vermont. It was watched with interest by the states immediately about us. In a very short time—within a year or so—it was copied by a good many states in this country—how many I do not know. It was commented on favorably by a great many who were present at these schools on various occasions, and they have been profuse in their praise of the movement which we instituted.

Perhaps it is superfluous for me to say anything about the advantages that this school holds for us who are engaged in this work. These advantages are not confined to the technical instruction which we get. For the State Board of Health has made an effort to get men of national reputations, who are acknowledged authority in their several departments to speak before you each year, and the technical instruction which we have received has been of the highest order; but the recognition of the value of good water supplies, perfect sewage systems, and thorough and complete registration of vital statistics, the safeguarding of public buildings, and the control of epidemic diseases, has not been the sole fruit of these schools. I think I am perfectly safe in saying that the best part of the instruction—the best part of the results that have come from these schools of health officers—has been derived from getting the health officers together, and from leading the health officers to think that there is something for them to think about besides their own local jurisdictions, their own municipalities, or their own towns. We have all learned here that we are citizens, not only of Rutland, of Burlington, of St. Johnsbury, of Woodstock, and of other towns, but that we are also citizens of the state of Vermont, and have more or less to do with promoting the physical welfare of the whole state. No town can build a Chinese Wall around its limits and say: "We will take care of what we have, and it is nobody's business how many nuisances we have, or what we have in the way of contagious diseases," no more than this state can build barriers around its limits, and say that "We will have all the smallpox, yellow fever, diphtheria, etc., we want, and it is no one's else concern." *It is the concern* of all our neighbors in the state when smallpox or diphtheria, or some other contagious disease occurs in our town or city; *it is their concern*, because it is quite sure to spread beyond *our* limits. It is exactly the same principles that we apply to the management of our town affairs. A man may claim the privilege of having all the contagious diseases mentioned on his premises, but so long as they do not invade his neighbor's, it is nobody's business. It is your business, you know; so it is the business of the state, when any town is this state is infected, or is supporting a nuisance of any kind, just as much as it would be the business of this country as a whole should the state of Vermont become infected with smallpox or yellow fever, or the plague.

So I say we have learned—all of us—at these schools, the lesson of

Digitized by Google

neighborliness—that the state of Vermont is larger and more to be considered than any one town in the state, or any one official.

We see a great deal now in print in regard to properly advertising our rural state as a place of resort for summer residents. There is no one way in which Vermont or any other state can so profitably advertise its inducements as a summer resort as by showing to the people in the cities—people who are going on their vacations—that we look after our sanitary conditions. The average man of the city is not careless in regard to where he goes and takes his family, as regard these matters; he goes away to escape business and hard work and nervous prostration, but he does not go where he will run into something worse, and the people in the large cities are looking for *healthy* places in which to spend their vacations. The urban press cautions its readers— "Look out where you go this summer, and don't bring back typhoid fever, or cholera, or measles, or whooping cough." The best advertisement that we can give Vermont as a summer resort is to go before the public in the larger cities with statistics that will show that the number of cases of diphtheria, smallpox, scarlet fever, and all these infectious diseases, is way down. That is what we are doing and must do to make Vermont a popular summer resort. Pure air, pleasant scenery, and a good hotel are helps, but good sanitation is growing in importance in the eyes of our city friends every year.

This school is a state institution. We are here at the public expense. It is our duty—every one of us—to come here, and to get out of these schools all the good we possibly can, and we should carry back with us a certain amount of information and intelligence on these subjects which we should spread, and so become centres of knowledge in every town in this state. The public of the state of Vermont is with us—the majority of the people—the common people of the state are supporting this school, and I believe would regret to see it discontinued.

It is for us health officers to justify the confidence that has been placed in us, in putting in our hands the means for doing things along these lines, and this school, above everything, is designed for just that end.

ADDRESS OF RT. REV. JOHN S. MICHAUD, BISHOP OF BURLINGTON.

Mr. Chairman, Ladies and Gentlemen:—I am sorry that the governor is not here to meet you; as a civil member of the government of Vermont he would no doubt have great pleasure in speaking to you. The bishop will have to speak for the governor; he will address you a few words.

I did not take pains to write on any particular subject, but I did think we would have something of a Burlington audience that I might address

Digitized by Google

—I suppose my fellow citizens thought the school was exclusively for the health officers and did not wish to force themselves upon the meeting.

The health officer—as Dr. Caverly has stated—is a state officer, and as I have understood, has considerable authority. I hope he has authority to come out and to strike Burlington hard. It is demanded of Burlington that its water supply must be purified, and we citizens of Burlington thank you health officers for so dictating, because if there is anything that is good for us to have, it is pure water.

Vermont is well supplied by springs, by rivulets, by rivers; its hills are dotted on all sides with pure water. I remember the good old bishop of Burlington, whenever he used to send a priest out to Underhill—one of our back districts—always used to say to him: "You will find excellent water there." That is what we want—pure water.

I would like to talk to you to-night, just as the inspiration of the moment dictates, and I think it is the same history for the other towns in the state.

I was born here in Burlington sixty-two years ago; I have passed my boyhood, my manhood time, many years of priesthood, and as bishop. You are welcome to the Queen City—I represent it to-night; the mayor is not here, so I represent the city to-night. It is a beautiful city—we call it the Queen City. A great artist passed through this town once and said that all villages in New England were beautiful, but that Burlington surpassed them all—it is a picture in a frame. I love Burlington, its roads, its buildings, its institutions, its walks, its trees—I almost imagine that the road, and the sidewalk, and the curbing speak to me.

I remember when we had our water supply in Burlington from wells and cisterns. Then we had a system of bringing water in barrels; a good many Canadians used to go out with horses and carts with barrels to bring water to the inhabitants of the city. Then Burlington got the aqueduct. It was disputed whether to bring the water by power or by gravity. The taxpayers were persuaded to have a power system, and a power station was instituted on the lake shore. There was no purer water than the lake water then. When a boy I used to work in the lumber mill, and as I stopped to rest for my dinner, I used to take a dipper—a quart dipper—and dip it into the lake, and drink it off, and I grew strong and waxed well, for the water was good and pure.

Then the aqueduct was started, and they built for economy, of cement, and pipes of sheet iron were inserted; the mains were small; the people were poor, and they made use of it. The city grew, and kept on growing, and finally they had to change this system, and the water also changed from pure lake water, to water contaminated with sewerage from Montpelier, from Waterbury, from the Fort, from the hill, from Winooski, and the question now is: What shall we do in regard to our water supply?

I do not wish to dictate, but I wish to give an opinion. We must change the system of water. There is some talk of trying filtration; these things work well for a while, and in the end, we will have to change the system. New Yorkers are thinking of coming clear up to Lake George—a distance of

Digitized by Google

almost two hundred miles to get their water supply. The city of Boston has taken whole towns, appropriated residences and farms and farmhouses, and made square miles of reservoir and installed filters, in order to have pure water. Burlington must in time follow in their footsteps. Let them go out into Hinesburgh, clear out to Hinesburgh Pond, and if the pond is muddy at the bottom, clean it out, and give us good healthy water as long as the hills last.

I was down in Asheville, North Carolina, this spring. We have not a fair idea of the southern people. We think they are slow and unprogressive. Asheville is a city of about 16,000 inhabitants; it has good pure water, their system is taken from mountain springs, something like fifteen miles away. I used to drink four or five tumblerfuls every evening after supper. We of the north, with our progressive, energetic ways can do as much as they do. We have money, which they have not; we have energy which they have not, and we should do as well as they, and far better.

When I was quite a young man, during the first years of my priesthood, I was called upon to see a patient sick of smallpox, and when I got there, I found seventeen down with the disease. The town authorities had bought a farmhouse and made it into a pesthouse. I went down, and had to stay there, giving spiritual consolation, for something over an hour. I saw the health officer when I got outside; I had asked his permission before going in. The old doctor himself came down with smallpox.

There was one thing the people of Newport, where I was then stationed, could not understand. When it came to the destruction of clothing—particularly furs—they asked me what they should do, should they destroy their furs. I said, certainly, destroy them, burn them up. They made a big bonfire and burned all their clothing, furs, and so forth, and the people of the neighborhood cried out: "Father Michaud is going to give us all the smallpox, he's burning up all the furs and smallpox clothing, and the smoke is coming over here." They did not understand that fire destroyed germs. There was need of a school of this kind to educate the people of Vermont up to the point of taking care of themselves and their neighbors.

I am proud of the health officer who enforces the laws placed in his hands. We want the health officers to strike hard; carry out what they are appointed to do, no matter who are hurt, rich or poor. We know from experience that typhoid fever and diphtheria break out in the families of the rich rather than in the poor cabins, because their plumbing has often been done at the lowest prices—done by the man who took the contract at the smallest prices—who put in poor material. And their houses are often smelling with coal gas, smelling with sewer gas and other gases, closed up, no ventilation, windows tight, and the air therein being contaminated. So that you health officers must make no distinction, you must be prompt, you must strike, and strike hard; strike to be felt at the proper time, because you have to protect the people of your own towns against its own dangers and from contagion coming from neighboring towns.

I feel that I am talking to doctors. They are a class of men whose sen-

Digitized by Google

sibilities are blunted; they are meeting disease at all times; they are meeting death itself, and they continue to fight against it when they know themselves in their own heart and soul that a person is gone. There is a question with our Catholic people as to who should be called first, the priest or the doctor. I remember once driving from Wells River to St. Johnsbury, a distance of twenty-two miles; we left Wells River at about 12 o'clock, and when we got within about ten miles of St. Johnsbury, we caught up with someone driving along ahead of us. I asked the driver who that was, and he replied that that was the doctor, and I said to him, "We must get ahead of the doctor," and we whipped up our horse, and we got into St. Johnsbury ahead of the doctor!

It was during that same visit at St. Johnsbury, at a meeting held in that village—centennial year—that I made a remark that has been rather famous throughout the state. I was called upon to speak, I was then a young man, there must have been an audience of five thousand people. The chairman introduced me, and I started off by saying, "I am half French, half Irish, and all Yankee," and I think it is a hard thing for any person born in Vermont to be anything but a good whole-souled, hardy Yankee.

The doctor is a brave man, the profession is one of danger. I admire their vocation, they are called by God; they are called to be the salvation of the people.

Of course the intelligent part of the community must read, and do read more or less of what is being published in the papers; we read what is in the papers in regard to the preservation of our health and that of the community. I read the other day about how the health officers down in Pennsylvania have been trying to stamp out some kind of an epidemic; they have passed a resolution to the effect that all doctors must shave, must go with smooth faces, because they argue that the hair of the face is one of the greatest conductors of disease. You come in contact with disease, and you go out to other patients, and perhaps spread the contagion in that way.

Then most of you know, some of the very poor seem to have a fear of fresh air. You go into a sick room in a poor family, and you will find the door closed, the windows down, and if you make bold enough to open a window to get a little air, some member of the family will almost immediately say, "Oh, my, there is a draft"—that will be certain death to the patient. So you see what you must do; you must be courageous, and, if there is any chance of ventilation possible, you must see that ventilation must be given. The health officers do not do this, because I do not believe they have authority to go into a room in a man's private castle, but as you as doctors can do it.

Now, I hope you will pardon me if I have said anything not proper to be said; and I hope that you, as health officers, will bring your influence into operation and tell us what is right to do, and we will obey.

Dr. Caverly.

One of the best friends, I might say, that a good cause can have is the

Digitized by Google

press. The most potent helper that a public official can have is an editor, if he is the right kind. I can say exactly the other thing, that he can be the worst enemy of a public official, if it is necessary; but I do firmly believe that the majority of the editors exercise due discrimination on which side they cast their lot.

I am very glad, as I am sure you will be, that we have a good representative of this class here to-night, in Mr. Frank L. Greene, editor of the St. Albans Messenger, whom I wish to introduce to you.

THE NEWSPAPER IN ITS RELATION TO PUBLIC HEALTH.

BY FRANK L. GREENE.

Mr. Chairman, Ladies and Gentlemen:—I remember an old story that was told to me, and I will try and pass it on to you, it was told about a young man who was at a great political convention, and was unexpectedly called upon for a speech. He was in company with an elderly friend, and when he was called upon to speak, he leaned over and said excitedly: "Uncle, what shall I talk about?" His uncle looked wise, and said "Just talk about a minute."

I have been asked to say a few words to you to-night, and I feel that it is quite out of my line, for a layman to give anything like counsel to professional men. I will try to be serious for a time, and have written down my serious things so I would not forget them.

I desire briefly to lay before you for consideration the indispensability of the aid of newspaper publicity in your enforcement of sanitary laws, and I hope to do so as a private citizen interested as a man and householder in the health of the community and not as a mere news-vender. Indeed, it seems to me that the more the various officials in charge of the people's business realize that, while of course primarily instituted as a gainful enterprise, the properly conducted newspaper is nevertheless actuated by the same high ideals of being useful to the public service that actuate the most enlightened and public spirited private citizen, the closer the press and the government will work together and the greater the popular benefits that will ensue.

I shall ask you to forget some of the oldtime ideas of journalism, to forget the newspaper as a mere personal or factional organ, to be employed solely to accomplish its owner's private political ends or business purposes of one kind or another. I shall ask you to forget the once justifiable popular impression that apart from its meagre merits as a news-vender the newspaper was designed to serve merely the desires and objects of one man or set of men and could not conceal the narrow limits of its self interest even at that but often suppressed news that it deemed inimical to its own purpose to

Digitized by Google

publish. I shall ask you to forget this pioneer stage of journalism and to consider the press and its mission as it is revealed to-day in the modern conception and use of publicity.

It is too late to explain to a body of men like yourselves that one of the greatest factors in the ordering of the world's affairs to-day is publicity. I need not point out to you what the wonderful discoveries in improved methods of transmitting intelligence from one side of the globe to the other —the telegraph, the telephone and the printing press, bringing to the ears or laying bare before the eyes of all people everywhere the secrets of every art or craft or of every nation under every clime,—have done for the enlightenment and progress of mankind. I need not dwell upon the incalculable benefits to the race that have resulted and are daily resulting from the ceaseless activity of the newspapers and their remarkable power to keep any given number of people all thinking about the same thing at the same time. As sensible men you realize that the way to get improvements in the public service nowadays, the way to reform institutions of government, secure better laws, advance public utilities, and obtain the highest degree of performance of duty on the part of public servants of all classes everywhere, is to get the newspapers interested in the matter.

And so, I am here to-night at the request of your officers to remind you of the desire of all reputable, public spirited newspapers everywhere in Vermont to coöperate with you in the noble labor of safeguarding the public health. The newspapers of Vermont can be your best allies in the many and perplexing tasks that present themselves for you to perform throughout the year and they will be glad to lend you their aid, to work with you to the accomplishment of your great purpose, from wholly disinterested motives and because they realize that it is a part of their acknowledged mission to do so.

Perhaps the most perplexing question that will present itself to you in connection with this matter of newspaper publicity is to determine where the right of the individual man or woman to privacy in his or her affairs and interests leave off and the right of the community to publicity about them begins. But this, it seems to me, upon analysis will resolve itself in each case more into a matter of sentiment than of fact. There is a natural aversion on the part of most men and women to having the details of their exact condition of health made a matter of public knowledge. The inherent instinct of privacy combats the modern idea that the community at large has a property in the health of all the people that compose it. And yet the very post you hold as health officer, the very law you are commissioned to execute, are themselves the creations of these very same people, and directly equivalent to their full, free, solemn avowal that every man, woman, or child among them has a distinct and inalienable right to know the condition of health of all the others; to this extent, that they shall at all times be put upon their guard against any contagious and infectious diseases from which their fellow citizens may be suffering. The modern sanitary laws, the modern statutes enforcing certain regulations in the interest of the public health, are simply man's attempt to enact into positive form one

Digitized by Google

of the rudiments of the great ancient natural law of self-preservation. He is rather late in setting about it, to be sure, but he has actually recorded his recognition of the fact that all his neighbors have a right to be put upon their guard against him if he is suffering from some communicable disease. And it is your duty and the duty of the newspapers to compel him to live up to his own law. And so right here I submit to your judgment that the right to quarantine a man's house is in itself an implication of the right to publish the fact of such quarantining. For that matter, the health officer does nail up in a conspicuous position on the house a placard bearing the name of the disease against which the public is to be warned. That is publication, surely, but in a limited sense. It is restricted to a warning of all such persons only when they get to the doorstep and then only such as are able to read.

What do you say to the proposition that the health officer should report all cases of quarantine to the newspapers for publication as well as placard the house? Why would not all the purposes of warning the public against a contagious or infectious disease be better served by the newspaper publication?

Again, when a community is threatened by an epidemic of some dangerous disease, why not take its newspapers into confidence from the beginning? Does not experience show over and over again that it is better for the public to know the truth, the whole truth, and nothing but the truth, than to be kept in ignorance? I realize full well that there is still an old-fashioned aversion to publicity to be overcome in such cases, that business men will bring all manner of pressure to bear upon both health officers and newspapers in an endeavor to prevent the publication of news of local epidemics so that people will not be scared away and trade will not be affected. But it seems to me the duty of both health officers and newspapers is plain under such circumstances. The only way to safeguard the public health is to warn the people that a contagious or infectious disease prevails in a certain locality and caution them to avoid it. It seems to me there is absolutely no escape from the logic of this, that is, if we agree beforehand that human lives are worth more than a few dollars and cents in trade.

Beside all that, it has been shown over and over again how this very same mistaken idea of conservatism and caution that invokes secrecy in such matters invariably results in one of two evils that work infinitely greater mischief to the community than the truth would have done in the first place. That is to say, either the news of the actual state of affairs is suppressed so long that when the public is put on its guard the epidemic is found to be far more serious than anybody had even dreamed of and lives have been or are lost through ignorance of actual conditions, or else, as is always the case when the facts are not promptly disclosed, rumor with its thousand tongues carries far and wide sensational and extravagant stories of the epidemic, that do more damage to the trade resources of the community than the simple truth would have done in the beginning.

Digitized by Google

And there is something at stake in this business beside the preservation of the public health from some specific instance of danger. There is something in it beside merely warning people that their neighbors are suffering from contagious or infectious diseases and to look out and avoid contact with them. There is the education of the public along advanced lines of hygiene and sanitation in it. There is the building up of a public sentiment that will help health officers to enforce sometimes drastic but necessary laws. The health officer may have volumes of law behind him, but he can do little toward effectively enforcing them unless he is backed by public sentiment. He may be aware of abuses and nuisances more or less prevalent in his community which may not be covered by any specific law, but which none the less should be remedied. But, with the best intentions in the world, he can do nothing in the way of reform without an enlightened public sentiment behind him. If he will take the newspapers into his confidence, if he will treat with them as responsible allies in his own mission, just as they are treated with as responsible allies by other public servants, the newspaper will in time create the public sentiment that will correct the abuses. The press, by daily calling attention to a fact or principle or by making timely and important application of it to fit immediate conditions, gradually forms the popular habits of thought along new lines and builds up a public sentiment that in time accepts an entirely new proposition as a matter of implicit faith, as a commonplace matter of fact. By virtue of persistent publicity, by keeping everlastingly at it, as the newspaper men themselves say, the press moulds public opinion and aids in the cause of good government.

SCHOOL SANITATION.

BY HON. WALTER R. RANGER.

Mr. President:—I have not had time to prepare a paper for this important session, but perhaps I can best deliver my simple message to you in a direct and intimate talk. Though this is a school for health officers and I am an old teacher, I am not going to play the schoolmaster with you, but will simply try to point out some existing conditions and some pressing needs in school sanitation. It is a good thing to see people of mature age going to school again, seeking ways and means for the betterment of our people. The work of the State Board of Health is a public interest of supreme importance and your summer session means a great deal for the common weal of Vermont. No one of us is too old to learn in life's unending school.

I would not lay all the responsibility of healthful schoolhouses on the physician, but more and more we laymen are confidently looking to your noble

Digitized by Google

profession as the chief agency in conserving and improving conditions of public health. Any community will, in time, heed the persistent demand of its health officer. Supported by the State Board of Health, the local health officer can do more than any one else to improve the hygienic conditions of schoolhouses in his community. Existing law and sympathetic public opinion give you opportunity and influence to perform a high service for our school children.

When we remember that one fifth—yes, nearly one fourth of our population is shut up in schoolhouses for several hours each day during the school year, we will realize that this subject of school hygiene is worthy of your most sincere consideration. Furthermore, I think you will realize, when you remember that our people become better by one generation being a little better than the former, that among the forces and agencies making for better public health this great agency of the school is really one of the most helpful means for promoting better health in the state of Vermont.

While "health is the first wealth," strangely enough, there is no subject in the school more distasteful to pupils and teachers than physiology and hygiene. No one thing seems more difficult to inspire within teachers' minds than a just appreciation of the proper care of the health of school children. For years, the state has attempted, through the educational department, to instruct its teachers that one of the first duties of a teacher is thoughtful care for the health of her pupils. Every true parent cares most for the health of his child at school. The parent—and many parents make the public—does not want health sacrificed for the benefits of school education; for good health is a prime aim in rational education. It is high time for the intelligent citizenship of Vermont to provide that no schoolhouse shall longer exist in the state with unhealthy conditions, unsightly surroundings and immoral influences.

With fine sanitary schoolhouses, with due regard to the laws of health, with proper provisions for lighting, heating and ventilation, and with the actual formation of habits of health, the school, by educating its children, becomes a real force in the development of a stronger, healthier and happier race. Without such conditions school becomes powerless to promote better health or even to care for the health of its pupils. The school may well exercise a larger function in this matter of health. I am inclined to think that the school has not been recognized as an agency for promoting better health so much as it should be. We will all agree that good health is a fundamental element in education; we will agree that not only will good schoolhouses make for good health of children, but that health is one of the prime and fundamental means for which the school has been created. We understand to-day, as never before, what is meant by physical education. I remember hearing a college professor say, "You can get along very well without brains, but you must have a good stomach." He evidently meant that one needs first a well ordered stomach, and that the brain will perform its function if the stomach is kept in good order.

Digitized by Google

If it follows—and it does—that first and foremost the physical health of the children must be looked after, and that we are to have a proper care of the children in school, then the teacher must come in for her share of responsibility and duty. She must not only conserve the health of the children, but must contribute something for public health through the proper study of hygiene in schools. The function of the school has greatly changed in past years and greater demands are made upon it. In response to increased public requirements and changed conditions, it must loyally undertake new tasks. A hundred years ago, about all the parents expected from the school was that their children be taught to read, write and cipher. Now a score of school subjects and arts are required by law. They didn't expect the public to pay much for their school education. To-day the school is supported wholly by public taxation. In all these changes the school has been assuming more and more the function of the home in the training of children and youth. The home in village and city no longer gives to boys and girls a valuable manual training. The school is trying to supply the lack. Under urban conditions, more and more, the child is sent to school to learn those things that you and I, perchance, learned on the farm.

I would have the school so ordered and conducted as to be a strong agency, both by practice and instruction, for the education of the public in matters of health. The school certainly can do much to enlighten the home. By properly training its pupils it can promote a healthy public opinion, an intelligent public opinion, in regard to sanitary conditions, both public and private.

A good schoolhouse is a prime condition, not only for the health of pupils but also for the efficiency of the teacher. Teachers are too often handicapped. We must realize that a teacher is susceptible to every influence, that good conditions not only enhance her work but also make her a better teacher. Many of our teachers are immature and untrained. They are yet to be trained by experience. Our very schoolhouses help train our teachers. Put a fair teacher into good surroundings, with good health conditions, and with everything arranged so as to inspire her with an ideal of cleanliness and the proper care of the children and she will easily learn and constantly improve. But take a refined and intelligent woman, put her into an old dilapitated schoolhouse with leaky roof, rotten floor, broken windows, dirty walls and filthy outbuildings, she can accomplish very little. And the weak teacher soon becomes no better than the schoolhouse. If our school boards will make good schoolhouses everywhere, all our teachers will soon be educated up to the demands of the people.

Do not misunderstand me as saying that conditions are generally bad. Two thirds of our children go to school in good buildings. Poor schoolhouses are the exception, but we must get rid of them. We want good schoolhouses everywhere. For example, one schoolhouse comes to my mind. When it rained the children had to huddle together into one corner; the door had been carried away, but somebody had put up an old window shutter; the roof of the outhouse was gone; everything was in the same dilapi-

Digitized by Google

dated state; and a school was actually taught last summer under these conditions here in Vermont! It is, of course, an exceptional case, and great improvement is actually making. We build twenty-five and repair four hundred schoolhouses yearly. And in all this great improvement, I heartily appreciate the work of the Health Board of the State and of the service of health officers. Vermont has no greater public interest than this work. I can see the results of your work all over the state. I could relate very pleasant reports about conditions remedied.

There are in this state a few old buildings that were built forty or fifty years ago that are still being used for schoolhouses. The children of to-day in them are not having as good opportunities as their grandfathers did, for the buildings have deteriorated. A man will say "I went to school there forty years ago, and what was good enough for me is good enough for my boy." It is not as good as the father had. There has been deterioration all these years. The schoolhouses of fifty years ago compared with the homes of that time. Children reared in the homes of to-day need schoolhouses to correspond. It sometimes happens that children of refined homes are forced to attend school in schoolhouses utterly out of keeping with the comfort, cleanliness and refining influences of this day and generation. What would happen if an officer should undertake to enforce the truancy law under such conditions? I believe that no court would compel children to attend school in some of our schoolhouses.

We are doing fine things in Vermont educationally. Her people are loyal to their paramount interest of school education. According to a statement of the United States Commissioner of Education the tax rate for schools in the United States is the highest in Vermont with a single exception. Vermont spent in ten years a million and a quarter dollars for new school buildings. They are the pride of many communities. And yet the building I described makes us all ashamed. Improvement must go on till there is not an unhealthful schoolhouse in Vermont. Nothing less will satisfy her people.

It has already been stated here that schoolhouses are a great source of contagion. You know that a little boy or girl may go to school in the morning, take a chill, come home at night, sicken and even die. You know that diphtheria breaks out in school, and one or more pupils never return. And you know it might have been prevented by care. I might give you many examples in which the school has sent disease and death into the home. With only a hint of the sad and serious story that might be told, I plead, as parent and citizen, in behalf of the people of Vermont that you will do all in your power to remedy these conditions.

Now most improvement is to come through you doctors and health officers. The people will pay attention to what the dectors say. The people will give reasonable attention to us teachers and superintendents, but when the doctor puts his foot down and says a thing, his opinion is respected. If the schoolhouses are to be improved, it can best be done through the doctors and health officers, on the ground of the health of the people's children.

Digitized by Google

The law up to last fall was that the State Board of Health could direct the building of new schoolhouses, but made no provisions about remedying old buildings. I think it is time for some of our progressive communities to put a decent system of heating and ventilation into old buildings. Most of our new buildings are built according to approved rules of sanitation. But there is need of improvement in many old buildings, even in some of our larger towns.

Reference has already been made to-day to the work of janitors. After a building is built according to sanitary rules, it is too often left to take care of itself. The boys are allowed the run of the building. Floors are not properly swept and too rarely. Dirt and dust accumulate, walls are defaced and disorder obtains. What is needed more and more is more competent janitors who will take proper care of buildings. School hygiene demands better janitor service.

I would like here to sound a little note of encouragement in calling your attention to the fact that Vermont paid for janitor service last year over $40,000, being a gain of $6,000 in three years. We appreciate more and more the importance of care of the schoolroom. Only two days ago I received a letter from a village making inquiry regarding the engagement of a competent janitor.

There is a law which requires the health officer to report the conditions of the different schoolhouses and public places in his town to the annual March meeting. I know how you feel about it. Some of you do it year after year, and little notice is taken of your report. I would like to submit to you that it is just this repetition that is often needed to stir the public mind. If a health officer, March meeting after March meeting, reports to the citizens of his town that they have a schoolhouse that is not fit to be used, sooner or later the public is going to be influenced. I do not wish unduly to urge this matter upon you, but I do believe that a great deal of good has been accomplished by the health officers impressing upon the people year after year the necessity of better conditions. Health officers made such report in seventy-two towns in 1902; in seventy-four towns in 1903; in one hundred and three towns in 1904.

In 1904 there was another important law passed which provides for the testing of eyes and ears of children in school, and which, I firmly believe, will greatly promote the health of school children.

I wish also to call your attention to a law which was passed last fall, under which the State Board of Health has power to examine or cause to be examined, any schoolhouse or schoolbuilding, anywhere in the state of Vermont, and if found unsatisfactory it may be condemned by the State Board of Health. This is progressive legislation and gives practical opportunity for improvement.

If, in your town, there is a schoolhouse totally unfit for use, I hope that you will have the condition of such schoolhouse brought to the attention of the State Board of Health for their examination. The condemnation of a few schoolhouses would not only conserve the health of children but stimu-

Digitized by Google

late a public appreciation of needed improvement. The time has come when we cannot tolerate certain conditions, and I expect we shall reap results from this law and its administration in coming years.

Discussion by Dr. Goss, Norwich.

There is an old saying "that a thing smells as bad as a summer school," and that means something too. I have some very vivid recollections, and have in my mind now some very good pictures of things which certainly did exist when I went to school. I occupy the position of servant to the school and health board; that is some advantage to myself and I hope to the schools and health of the community. I am chairman of the board of school directors and health officer of the town. When I see a schoolhouse that is not right, I fix it right and say nothing about it. That of course cannot always be done.

There are a few things that I wish to speak about. I wish that our State Board of Health would make a ruling, making it absolutely necessary that running water be placed in every schoolhouse in the state of Vermont. There is hardly a country schoolhouse that has not some good source of drinking water. It could be arranged so that it could be shut off at the end of the term. If there is anything in the state of Vermont that spreads contagion and disease it is the old tin water pail. I have known of a contagious disease going through a whole school, every child in the school; one child contracts the disease, the next one takes it, and the next, and so on. All this is not necessary; the expense of putting a stream of running water would be very slight indeed.

I don't know what to say about our country schoolhouses. I don't say anything about the schoolhouse in the towns and cities; it is the schoolhouse out on the hillsides that I want to call attention to. The outhouses are filthy, the floors decaying, the windows admit more air per capita than is necessary. I was in a schoolhouse a short time ago, and you could put your right foot right down through the boards of the floor; that is what you might call direct indirect ventilation. That town thinks it has a pretty good system of schools. That is a fact; I have seen it, and I regret to say that two years ago when I was first appointed chairman of the school board, there were several schools in the same condition in our town.

The heating problem of most of our country schools is a problem indeed. An old box stove that has done service for fifty or sixty years and is still in use, patched up with some tire iron; the stove door is broken and that is patched up and a fire is started up; then the children are roasted for a while, then the fire goes out, and they are frozen. Some system should be adopted whereby heat could be applied more economically and with better results than at the present time. I confess I am unable to solve the problem. The country schoolhouses have no basements, no furnaces, and as has been suggested, no janitor. We have adopted the janitor service, and placed it under the care of the teachers, paying the teacher so much per term, and if we have a filthy schoolhouse, we come back on the teacher. We have adopted a plan

Digitized by Google

of applying a good parafine oil to the schoolhouse floors, then when it is swept, use sawdust, and we think we can get up most of the dust.

I wish to say a word about the filthy old blackboards. Most every teacher I find has some throat difficulty, as well as the children. They stand at the blackboard and use the erasers, and inhale the chalk. I wish some way could be suggested to remedy this. I think perhaps a schoolmaster could solve that problem, to see if it could not be done. I don't know of any way.

I have made it a plan for the last two years to call the teachers together once every term, and give them a little instruction in the common diseases that are likely to appear in a schoolhouse. I think every teacher should be instructed in these matters. It is a surprising thing to go into a schoolhouse and hear the teachers give instructions in physiology and hygiene. It is so scattered and desultory, that we wonder that any results follow. I believe that not only the health board but the school board should require that teachers be instructed sufficiently in these matters to give them an idea of what is expected of them when they go into a schoolroom.

I think every teacher should know ophthalmia, or any of the simple diseases. If a child comes to school and complains of a sore throat, send that child home at once. We have not had any serious disease in our schools in the last two years. It is the duty of the health officers to instruct the teachers so that they can look after the health of the children under their charge.

This matter of disinfection of schoolhouses has been pretty well discussed. I make a practice of spraying the room, filling it up with a strong solution of formaldehyde and allowing it to remain until within a few days of the beginning of the new term, then have it swept and cleaned out, and I find that is a pretty good way to get the disinfection. I leave word with the committee or some one in charge to notify me when the school is closed, and I go there and do the disinfecting, and I think it is a good way.

This matter of putting running water into the schoolhouses, I do feel to be very serious, for the old dirty water pail is responsible for a great deal of the sickness among school children, and I call your attention to a few things that are now in existence.

Suggestion by Dr. Clark.

Dr. Goss asks for some way of dispensing with the old blackboard. We can easily dispose of it. In my town of Castleton we make blackboards of soft slate, such as is used in making slate pencils, and slate pencils could be used. The boards could very easily be washed and kept clean. I wish to submit that as a matter for consideration.

Further discussion by Dr. Norcross, Judge Fisher and Mr. Butterfield.

I think the people of Vermont are in close sympathy with the work of the health board. There are some conditions which are bad and which should be changed. I will tell you one which is most illustrative of it.

Digitized by Google

There was an old schoolhouse that I found, it seems to me the worst thing I ever saw. I tried for a good many years to get an appropriation for a new one. Some of the people in the district thought they didn't need it, especially one man who had no children and who had lived near the schoolhouse. After a good deal of work, we received the appropriation to have a new schoolhouse built. We thought perhaps it would save a little money if someone in the neighborhood would buy the old one. I went to this man who had opposed the building of the new one on the ground that it wasn't needed, and said to him "You'd better buy that building; it is right next to your land." He said, "Well, I don't know as I want it, I don't know as I could use it for anything, but perhaps I could fix it up a little and use it for a hogpen." We gave it to him, and he used it for a hogpen.

I do hope that the State Board will pay attention to what the speaker has said in regard to the placing of running water in the schoolhouses, because I believe the old method is a source of disease. I know in my own town that the water that is used in the schoolhouses is not suitable; taken up in an old rusty pail from a brook or old well or wherever they can get it, and kept there in the pail. I hope they will pay attention to this matter, and remedy it.

Question.

Would you suggest individual cups?

With running water there will be no particular need of individual cups, as the running water will more or less cleanse that cup; but when you come to put a cup into a pail and leave it there for two or three years, or until it rusts a hole through the bottom of the pail, it gets to be a pretty filthy thing.

Discussion.

This subject of school sanitation is one which none of us who are interested in the curtailment of contagious disease can get away from. I have been interested very much myself, and have had some experience, as Mr. Ranger perhaps remembers, with the summer school. One question is always uppermost in my mind, and that is: what would happen if the compulsory educational law was strictly enforced, when the conditions are obviously unsanitary, and I have brought the matter before the school commissioners in regard to these summer schools. I don't know but that some of our towns will have damage suits on their hands, which will prove a good deal more costly than sanitary schoolhouses; and there *will* be damage suits brought against towns and school districts when some such thing happens; when some family loses its children from diphtheria or scarlet fever that can be traced directly to the schoolhouse.

I wish we had the combination of health officer and school commissioner more often, and that they were all like Dr. Goss.

Digitized by Google

In speaking before one of these summer schools two or three years ago, a teacher followed me out, said she wanted to speak with me for a moment alone. She described a condition of things in a mountain town, that was not Norwich, by the way, where the outhouses, and the woodshed, and some other parts of the building were certainly, if she described them correctly, in a disgraceful condition. I told her that when she had anything of that nature, to go to the health officer; that there was a health officer in every town in the state, and that she could feel perfectly free to consult with him, and to complain to him. She said, "But the school commissioner is the health officer, and I have complained to him, and he won't do anything."

Now there was a condition of things very much the reverse of the condition of things which prevails in Norwich. I am persuaded that this is a little unusual, and few school commissioners and health officers would tolerate anything of that kind, and I think if the combination were made more often the condition of our schoolhouses would improve.

Now there is one thing that is perfectly true, and that is that contagious diseases are spread more often from the schoolhouse than all other places put together. I think the school building is the exchange for diphtheria, scarlet fever, measles, and occasionally tuberculosis, more particularly than from all other conditions combined.

Now you will notice that the State Board has modified its modified quarantine, which the health officers are absolutely compelled to carry out. The present modified quarantine can be, and I think it rests with you gentlemen to see that it is. It consists in simply keeping these cases of measles, etc., out of places of public amusements, keeping the children away; and the public school is the most important of all of them.

Measles and whooping cough are especially hard to manage, the difficulty being that they are started before anybody recognizes them, and they both have preliminary stages or symptoms and both of these diseases are marked by a cough. Cough should never be allowed in the schoolroom, whether it means tuberculosis, ordinary cold, or the premonitory symptoms of these diseases; *cough should be kept out of the schoolhouse* and children who have it should be sent home.

This matter of running water has been brought up here. In my town there is no running water near the school, but I am going home and something is going to be done about it. I would like to ask one question.

Is it obligatory upon the health officer of a town to make a personal examination of every town schoolhouse in his town? and who pays for it?

Answer by Dr. Caverly.

Every health officer is expected to make a sanitary survey of the schoolhouses in his town, and report at each March meeting and the town pays the bill.

Digitized by Google

Question.

I should like to ask a question. If a health officer makes his report, year after year at the March meeting, of the condition of things, that they are in bad condition, and the school commissioners sit there and laugh at him, what more can a health officer do? They simply won't do anything in regard to ventilation of schoolhouses.

Answer by Dr. Caverly.

You can call the attention of the State Board. Act Number 44 of the last Legislature provides that the State Board of Health shall have power to examine or cause to be examined any school building or outhouse, and if found to be in an unsanitary condition, to condemn the same.

Discussion by Dr. Norton.

I haven't but just a little to say. What are you going to do if your town refuses to do anything, to act upon your report.

I condemned a schoolhouse, asking for an appropriation; the next year I did the same thing and they refused to do anything; and last year I condemned it, and I got quite a favorable showing from the town, among the real wealthy. A few of the taxpayers were in favor of building a new schoolhouse, but the people fought it at the annual March meeting; then I made a report to the State Board. We had a member of the State Board come there, and he backed up my condemnation at a special town meeting, and the town voted to build a new schoolhouse at a cost of four thousand dollars. The schoolhouse cost ten thousand dollars, has running water, water closets, and all modern sanitary conditions that we can think of. It is heated by a furnace, and is perfect for a town of our size.

H. H. Wheeler.

It doesn't seem to me that the duties of parents towards their children can be performed by any teacher, however good she may be; and it doesn't seem to me that the size of the tax that is raised for the support of our schools is necessarily a gauge for their efficiency, for under certain conditions half the money will accomplish more good in a town if wisely expended.

I have one remark which I wish to make, and that is, that every town should be more careful in their selection of the board of school directors. And I wish to say right here, I wish there could be a law passed that no citizen of a town should be eligible to a position as school director that wasn't a patron of the school. I mean by that that he should have children to send to school; that he should have a living interest in the success of that school, and the town that will elect a board of school directors that is composed of poor old dried-up bachelors, or members of the community who have raised their families of children and don't care about any one's else, is not doing the right thing.

Digitized by Google

Dr Whitaker.

There is some truth in the remarks made by the gentleman, and yet, I think that sort of a law would work wrong sometimes. We have some now in office, while they may not be "dried-up old bachelors," they aren't worth much more! and there are quite a few who have no families, and who are entirely unsuitable to conduct the affairs of the schools, they have no children of their own and are not suitable to look out for some other fellow's children.

I believe this is one of the most important subjects that will come before this meeting. There have been many truths brought out here that will result in great good to the towns, and the whole state.

Dr. Newton.

I was a member of the school board for six years. I have not any children to send to school, but I am interested in the schools. When I took the position our schoolhouses were nearly all supplied with the old-fashioned desks and seats; when I left we had good modern seats and desks, and everything that I could get through my influence. I was very kindly assisted by the other members of the Board in this work. I think it is well to elect men to the position who are interested in the school; those who care for the condition of the public schools, more than for the money.

Mr. Ranger.

I don't know as I wish to talk any more. I wish to remark, lest there may be a misunderstanding about the condition of the schools in general. I estimate that about one half of our school children throughout the state are in schools with fair sanitary conditions, but perhaps a quarter more are under tolerable conditions; where the system of ventilation is not particularly good, but the rooms are clean and well cared for; and I estimate that another quarter of our children are in conditions that ought to be relieved.

I have said that Vermont was raising a larger tax than any other state in the Union except Nevada. Our people are devoted to the matter of education, and are doing large things for the schools.

Edgar Moore.

I have heard the talk about old bachelors and men who have no children, and I wish to say, that a man who gets himself elected to the position of school commissioner for the purpose of getting his own daughter in as teacher, no matter how unfit she may be for the position, is worse than any old bachelor!

Digitized by Google

EXAMINATION OF EYES AND EARS OF SCHOOL CHILDREN.

(By authority of an act passed at last legislature.)

By Geo. H. Gorham, M. D., Bellows Falls, Vt.

At the last legislative session, in 1904, a law was enacted compelling teachers in all our public schools to make an examination of the eyes and ears of all pupils in September of each year, under the direction of the State Board of Health and the superintendent of education. That you may fully understand its provisions I will read you the law.

Section. 1. The State Board of Health and the superintendent of education shall prepare, or cause to be prepared, suitable test cards, blanks, record books and other needful appliances to be used in testing the sight and hearing of pupils in public schools and necessary instructions for their use; and the superintendent of education shall furnish the same, free of expense, to every school in the state. The superintendent, principal, or teacher, in every school, during the month of September in each year, shall test the sight and hearing of all pupils under his charge and keep a record of such examinations according to the instructions furnished, and shall notify in writing the parent or guardian of every pupil who shall be found to have any defect of vision or hearing, or disease of eyes, or ears, with a brief statement of such defect, or disease and shall make a written report of all such examinations to the superintendent of education as he may require.

Sec. 2. The state auditor is hereby directed to draw his order on the state treasurer for such sums and at such times as the superintendent of education, with the approval of the State Board of Health, may require to carry out the provisions of this act. The total expense under this act shall not exceed six hundred dollars in any biannual term ending June 30.

Sec. 3. This act shall take effect July 1, 1905.

I consider this one of the most important laws passed at the last session of our legislature.

That the necessity for such an examination of the scholars in the public schools was apparent to our forefathers is proven by the fact, that more than one hundred years ago a book was published upon this subject. But more than half a century passed before any scientific or progressive action was taken. In 1867 Cohn of Germany published the results of the examination of ten thousand pupils in the public schools of Breslau, comprising all grades. In 1885 Dr. Randall of Philadelphia gave to the medical profession the results of his labor in the examination of 146,000 children in the public schools of his city. At present we have the statistics of the examination of several hundred thousand.

Probably Dr. S. D. Risley of Philadelphia has done more strictly scientific

Digitized by Google

investigating along this line than any other person in America, and by a study of the results of his work no one can help but be impressed with the vital necessity for such examinations for the good, not only of the pupils of the present, but for future generations. The physical defects that follow an advanced civilization, notable in the organs of special sense, is evident to any keen observer. A partial or complete loss of either vision, or hearing, renders it more difficult for an individual to reach the highest possibilities of life.

It is our duty as physicians and the chosen officers of the health of these individuals of the state to look to it that the coming generation be given the greatest possible opportunity to achieve this position. By observing any deviation from the normal standard in early life and correcting the same to the best of our ability we are safeguarding the child and thus enabling him to do more and better work for himself and the world.

Among uncivilized and semi-barbaric people defective vision is almost unknown. Among our own Indians imperfect vision is almost unheard of. The same is true of nations that devote but little time or attention to study.

It has been repeatedly proven by statistics that a large per cent of all children in this country, as well as in Europe, have defective eyesight or hearing. Some authorities say that of the fifteen million school children in the United States ten million have some trouble with either their eyes or ears. This is the price that we pay for a higher education. In order to give the greatest possible relief to these children placed under our care it is our duty to see that this handicap of defective vision and hearing be relieved to the greatest possible extent. We find that there is a constant and steady increase in the number of pupils that are afflicted, from the lowest grades up to the high school and college, and also an increase in the degree of their trouble.

All children are born hypermetropic or farsighted, but by the close application to study or close work some of them become myopic or near-sighted. It is very rarely that we find a myopic eye among the Indians and only a small per cent among the negroes. Now a myopic or near-sighted eye is a diseased eye. By examination of the posterior structure of the eyeball we can see the pathological changes that are taking place. Untreated, this condition will steadily advance so that the person will in time have a most serious defect in his vision or become entirely blind. Among the Germans we find more than fifty per cent who are nearsighted, the most advanced of any nation, in the line of education. The same close application will also tend to produce an astigmatic condition of the eye, or a state where the eyeball is not perfectly round.

In order to preserve the best possible vision it is necessary to begin treatment in early childhood. In most cases the parent does not discern this defect and the child himself is not conscious of it until it is too late to accomplish the best results.

The physicians present have many times had brought to them for treatment pupils from the public schools who were complaining of headaches,

Digitized by Google

pain through the eyes, and a scratchy condition of the lids. On examination they would find the eyeball red and the conjuntiva injected with a more or less increase of tears in the eye. Perhaps during the long summer vacation these symptoms would disappear to again become present in the fall. Very frequently these same scholars are called dull and stupid, but by correcting the error of refraction and placing suitable lenses before their eyes they will become bright energetic pupils. Parents and guardians do not fully realize the importance of correcting this eye strain and thus improving the physical and mental condition of the child. By calling the attention of the parent to this defect is what the law contemplates and by means of which the best possible results are expected.

Dr. Frank Allport of Chicago has been the chief promotor in the movement of having a uniform examination made of the eyes and ears of the school children of the United States. Some ten years ago he took up this work in the public schools of Minneapolis and after moving to Chicago he was instrumental in having the examinations adopted in that city. By his untiring efforts he has succeeded in having these examinations recommended by the American Medical Association and a large number of the state medical societies as well as by many of the state boards of health. It is also in use in the public schools of India. Aside from Vermont, Connecticut is the only state that has passed a law compelling its use. In a personal letter from Dr. Allport, soon after the passage of our law, he wrote me that he considered it superior to the Connecticut statute and that he had had copies made of the same, and sent to all the state medical societies and boards of health in the country as a model for other states, which I consider a compliment to our own lawmakers.

The ideal method would be to have these examinations made by qualified oculists and aurists, but on account of the expense attached thereto it would be impractical. The next best method is that adopted by Dr. Allport and incorporated in our law. By this method the teacher is able to find out whether the child has defective eyesight or hearing as well as any symptoms of disease of the external eye, or probable disease of the nose, throat or purulent disease of the ear. As all this work is done by the regular teacher no additional expense is incurred by the school board.

After an experience of ten years, Dr. Allport has produced a card that contains the regular Snellen's test type with instructions at the bottom for the teacher making these examinations. These are very simple so that any person who is qualified to teach in our public schools is able to intelligently conduct the examination. In addition he has prepared a card of warning to be sent the parents or guardian and a report card to be sent the school superintendent to be kept as a record. The facts to be ascertained, are:

1. Does the pupil habitually suffer from inflamed lids or eyes?
2. Does the pupil fail to read a majority of the letters in the number XX. (20) line of the Snellen's test type, with either eye?
3. Do the eyes and head habitually grow weary and painful after study?

Digitized by Google

4. Does the pupil appear to be "cross-eyed?"
5. Does the pupil complain of earache in either ear?
6. Does matter (pus) or a foul odor proceed from either ear?
7. Does the pupil fail to hear an ordinary voice at twenty feet in a quiet room?

Each ear should be tested by having the pupil hold his hand over first one ear and then the other. The pupil should close his eyes during the test.

8. Is the pupil frequently subject to "colds in the head" and discharges from the nose and throat?
9. Is the pupil an habitual "mouth breather?"

If the teacher finds defects under any of these questions a card of warning should be sent to the parents reading something like the following:

Card of Warning to Parents.

After due consideration it is believed that your child has some eye, ear, nose, throat defect, for which your family physician or some specialist should be consulted. It is earnestly requested that this matter be not neglected.

Respectfully,

_____Teacher.

Experience has proven that by this simple examination very satisfactory results may be accomplished. Of course it is optional with the parents whether they heed the warning, or not, but from what I can learn I think that they usually do.

Dr. Risley has shown by the statistics obtained in the examinations of the pupils in the public schools of Philadelphia that by the use of suitably fitted lenses that the advancement in the degree of myopia with which the child is afflicted will become stationary or progress very slowly and in a large per cent of the cases that are suffering from a farsighted or astigmatic condition, will be relieved. In all these cases the pupil is able to do more and better work with very much less nervous strain.

The Snellen's test type has seven lines of letters the largest of which should be read at two hundred feet and the smallest at twenty. On placing the pupil at twenty feet from the test card if he reads the bottom line we say that he has a vision of 20-20 or perfect sight. If he should be able to only read the middle line of letters his record would be 20-50; i. e. he is able to read the line of letters at twenty feet that should be read at fifty feet. In making a record of the vision of the pupil, always use the distance the child is from the card as the numerator, which is twenty feet, and the line on the card that he is able to read for the denominator.

By keeping a record of these examinations from the time that the child enters the lower grades until they pass through the high school we shall be able to obtain some valuable statistics in relation to the law. Teachers

Digitized by Google

have repeatedly told me that the relief that they obtained from the additional care and time that they formerly devoted to those pupils who were defective in vision much more than compensated them for all the time that they took in making the examination. Whereas formerly the pupil was dull and listless after having properly fitted lenses adjusted they became bright, energetic scholars.

I wish now to call you attention to another class of cases not less interesting from a medical standpoint; I refer to those with defective hearing and the "mouth breathers." We find these cases in all the schools and without an exception they are the dull, stupid pupils. The cause is due to an enlargement of the tonsils and an adenoid tumor in the upper part of the throat which prevents a free passage of air through the nose. Eventually they become deaf on account of the stoppage of the mouth of the Eustachian tube, or passage into the ear. The general appearance of these cases is always stupid, unintelligent and in some cases almost idiotic. Later, if deafness supervenes, the difficulty of inducing him to become interested in his studies and do good work will become correspondingly greater. No more brilliant results can be achieved in any line of medical science than to give relief to these poor suffering children. By observing this condition in early age before any serious pathological change has taken place in the ears and having these growths remove we are placing the child in the best possible condition to obtain the fullest benefit from his education. This is also true of those cases of chronic discharge from the ears which are a menace not only to the ear structures and hearing, but also to the life of the child as well. It is by the observation of these different conditions by the teachers of our public schools that we shall be able to render most valuable service to the young people of this state.

Some work has already been accomplished in our schools since the passage of the law last fall. Brattleboro, through its energetic health officer and progressive, up-to-date supervisor of schools, has had examinations made of all children in the public schools from the third to ninth grade, some four hundred and fifty. As a result there were found thirty-six per cent with defective vision and thirteen per cent with defective hearing. If this is true with a town like Brattleboro it is probably equally true with the other towns of our state.

It is the duty of each health officer in conjunction with the superintendent of schools to make a study of these test types, cards and records before the opening of the schools in September in order that you can give proper instruction to the teachers in regard to conducting the tests. The probability is that but very few teachers in the state know anything about the law or its requirements. It is optional with the teacher or superintendent of schools whether they devote a half day to these examinations at the beginning of the school year in September or only look over a few pupils each day after the regular school hours. In large city schools probably the first plan would be preferable.

We have no accurate test for the hearing that we can use in these ex-

Digitized by Google

aminations the same as we have for the eyes. As most of the watches that are used by the teachers have a very faint tick I do not consider it a fair test. Using an ordinary tone of voice and giving out single words or numbers and having the pupil repeat the word is as good a test as is required. Pupils that come in during the year should also have the test made.

I wish to give to you an extract from a paper that Dr. Allport read before the health officers school of Indiana about eighteen months ago. "A child whose educational progress is embarassed or almost stopped by reason of physical defects may soon acquire a loathing for education and all that education represents, and the seeds of idleness and irresponsibility thus sown, may, unless energetically and tactfully controlled, either by parental or surrounding influences, fructify and produce a personality ripe for sinister inoculation. If, therefore, the state can eliminate, control or mitigate the existence of such physical defects in children, and by its parental supervision place such children in a position of reasonable equality with their healthy companions, thus affording them fair opportunities for educational progress, its duties become unmistakably clear, and its investment of public funds for the consumation of such designs a laudable measure of unquestionable economics." "Almost all great reform and philanthropic movements tending towards the physical, mental, moral and sociological uplifting of humanity, are surely and inevitably endeavoring to grapple with the subject in the earliest years of childhood, before the withering and decadent breath of human degeneration has rendered upward and improving conditions wellnigh impossible."

Gentlemen, I feel that there is no work under your supervision that is more important for the future wellfare of the young people of this state than to see that this law is enforced. By so doing you will not only confer a blessing upon the pupils of to-day but on those still unborn.

Discussion by Dr. Twitchell.

Ladies and Gentlemen, Members of the Health School:—Allow me to add a few words to the historical part of Doctor Gorham's paper, for this is not a new subject. As far back as 1800 observations were made on school children's eyes and published. So numerous have these examinations been, up to the present time that we probably have as a basis of study some 200,000 cases. A synopsis of these voluminous statistics show that the percentage of myopic pupils steadily increases as one passes from the primary to the higher grades of the school. For instance, in children of eight years of age, or thereabouts, it was found that about five per cent were myopic, while among students of eighteen some twenty per cent were myopic. An increase from five to twenty per cent.

Now, the myopic eye is prone to disease; more so than any other eye. Among students of the higher grades, about eighty per cent of these myopic eyes are found diseased. One does not care to say positively that the strain of school life had caused all this marked increase; for it is natural for

Digitized by Google

myopia to increase, but there would be no such tremendous increase were these children not obliged to go to school.

I lay particular stress on the increase of myopia, because that eye is so subject to disease. Other errors of refraction, like hyperopia and astigmatism, while conducive to disease, are more likely to give rise to earache and headache, etc. Not only are these children subject to intra-ocular disease, but they are frequently backward and stupid or irritable.

How can this increase be diminished? Well, the first means is school hygiene; good light, good print and paper, correct desks, and a correct position at the desk. And this was the first method by which they undertook to solve the problem. It was not very successful; there was no marked diminuition; still, it is of importance.

Correction of errors of refraction by the wearing of glasses will do far more to check the evil than all other means combined; proof of this may be obtained from numerous statistics. I do not wish to be understood as advocating the wearing of glasses by every school child who has an error of refraction, but I do wish to state that glasses are indicated if the error of refraction is causing troublesome symptoms or is likely to lead to disease.

When I first heard of this law, I was not very enthusiastically in favor of it. I recognized its desirability, but I did not think it was practical. But after looking up the subject I have changed my views.

The method of examination by school teachers as proposed by Dr. Alport of Chicago and embodied in this law will eliminate all except the milder cases, and it is so simple:

"Does the child habitually have inflamed eyes?
Is his vision less than normal?
Does he frequently have pain in eyes or head after studying?
Is he cross-eyed?"

And these four questions correctly answered are all there is to it. Certainly it is simple enough so that any school teacher who has intelligence suffcient to teach can carry it out.

In regard to the examination of school-children's ears, I do not consider that so important, for those troubles are not so insidious as a rule. The marked deafness and the earache attract attention and locate the trouble.

In closing I would like to join in thanking Dr. Gorham for his excellent paper and to congratulate the state of Vermont on having a Board of Health so alive and up to date.

Dr. Cramton, St. Johnsbury.

Gentlemen:—It is obviously evident to you, and very evident to me that this subject has been thoroughly gone over by the excellent paper of Dr. Gorham, and the discussion of Dr. Twitchell.

All of you can easily recall that throughout Vermont and all the states, that the majority of the people have always thought the only people who

Digitized by Google

should wear glasses were those forty years of age or older; everyone younger than that was supposed to wear them for looks! But the fact that there are such a large number of children having defective vision has been more published and written about than formerly, and it has brought about a change, so much so that states are taking action upon it. As Dr. Twitchell says, I congratulate the state of Vermont upon formulating the law, and the health officers who had to do with the formulating.

You can get up all the cards and different means of conducting the proper tests, but, you must as individuals and as health officers bring about two things. You must bring about enthusiasm on the part of the parents and on the part of the teacher; you must interest both parent and teacher in the work. You must warn them; you must teach parents that above all things their child must have a *sound body.* It has been proven most conclusively that children who are badly nourished, who have bad hygienic surroundings, who do not have proper exercise, and as I said before, that they are badly nourished, are more prone to eye diseases,—because the body is in a weak condition. Malnutrition together with over-taxation of the eyes easily causes either one of the forms of defective vision, or some of the many pathological conditions of the eyes.

Therefore, you must warn the teacher that she should not give longer lessons than can be easily learned, if possible, in the school hours, and if possible with the minimum amount of artificial light for studying; for the reason that the best observations have proven that over-taxation of the eyes is the common cause of myopia. The school directors and the superintendent of schools should also be instructed in the buying of books having the proper type, causing the minimum amount of eye strain; that there should be proper ventilation in the schoolroom; the children should have proper posture at the desks, the desks placed in a proper position relative to the rays of light being shed upon the books. All these things will be conducive to very good results, if this law is enforced.

We want you to remember that the student of to-day is to be the teacher in September, and a year from next September perhaps another teacher will start in, and this work will all have to be gone through again and again. Doctors and health officers in charge will have to go over it every year, in order to properly enforce this law.

I look at the condition of deafness in children a little differently from Dr. Twitchell. I think it is just as essential for the children to have good hearing as good eyesight.

Now, gentlemen, I consider that it is most important that both teachers and parents, should have as complete an understanding as possible, relative to the cause of deafness in children, in order that they may be better equipped to prevent and advise proper treatment for its relief or care, therefore, I will briefly outline the pathological changes that take place in a large percentage of deaf children.

I can safely state that seventy-five per cent of the deafness in children is due, directly or indirectly, to adenoids. Adenoids are fibrous growth in

Digitized by Google

the post-nasal space. When present they cause partial or complete obstruction to nasal breathing. They interfere with the circulation of the blood to the brain; they cause marked catarrhal condition of the nose and throat, and last but not least in many instances they cause partial or complete obstruction of the orifices of the Eustachian tubes.

As a result of this obstruction to free nasal breathing we have a child that soon develops a severe type of naso-pharyngeal catarrh; he becomes a weak, sickly child. He is stupid in appearance and gradually becomes stupid in reality; as a result of the catarrhal condition and the obstruction in the Eustachian orifices a tubal catarrh develops also, the Eustachian tubes become partially or wholly obstructed; as a result the middle ear becomes a vacuum. Then there is suction, and the eardrum is retracted, the small bones of the ear displaced, inflammation and adhesions take place, resulting in permanepixation of the small bones of the ear and the eardrum in an abnormal position, and the result is deafness.

It is in this simple mechanical manner that seventy-five per cent of all the deafness in children is caused. Therefore you can all easily understand how important it is that these adenoids should be noted by the teacher and parent. For, unless the deafness is too far advanced and the little bones have become firmly fixed, the eardrum can be replaced in normal position by inflation. The very simple operation of removal of the adenoid growths will remove the cause and these deaf children will marvelously recover.

I certainly consider the subject of deafness in children, its cause and treatment just as important as that of defective vision; therefore, I again urge the health officers of Vermont to constantly warn the teachers to note carefully all mouth-breathing children, and when found, to advise their parents as to their proper treatment.

In conclusion: As I wished to present to you some real facts with reference to the real condition existing in our public schools to-day, I sent a letter to several school superintendents in different towns, requesting them to first send me the number of children in the different grades who wore glasses. Secondly, the number that apparently had defective vision, that did *not* wear glasses. As a result, I was able to collect statistics of 1,078 children from the first to the tenth grades. Out of these 1,078 there was reported a total of only 69 wearing glasses. The greater number being in the sixth grade; the majority being about twelve years of age. The number of children who did not wear glasses but who apparently had defective vision, was 74.

This shows better than anything, that there are many more school children in Vermont that have defective vision that has not been properly corrected than corrected. I found also, among the 1,078 reported, 45 as being apparently deaf.

Now, in conclusion, gentlemen, the state of Vermont has passed the law and it is for you, her health officers to create enthusiasm among the parents and teachers, in order that Vermont children will have proper care, nutrition, and hygienic surroundings at home. In the schoolroom the teacher

Digitized by Google

must regulate the work in such a manner that there need be no overtaxation of mental work.

It can only be by the hearty coöperation of both parents and teachers that the eyes and ears of Vermont school children can be properly cared for.

Dr. Clark of Castelton.

I would like to ask this question: I have noticed that in many of our public schools, in the work in arithmetic for the small children, in the second and third grades, are required to do that sitting in their seats, while the teacher writes it on the board for them, they are compelled to copy on their papers and carry it home, or lose their work. I would like to ask whether that will have or does have a deleterious effect upon the eyesight of the children?

Answer by Dr. Caverly.

I will say in answer to Dr. Clark's question, if the pupil has perfect vision it would be no strain, but if he is farsighted, and certainly if he is nearsighted, it would be a strain looking across the room to the blackboard.

Question by Dr. Clark.

The point I had is whether this method, constantly repeated day after day, if it would do harm to the muscles of the children's eyes?

Answer by Dr. Caverly.

Not if a child has good eyes. It is possible that a defect in the muscles might be increased.

I simply wish to speak in regard to the cards to be used for this examination which have been furnished the schools, which I presume you have all seen, which is something like the one hanging up here on the board, giving seven lines of letters; also below it is full instruction to the teacher; and by looking this over carefully, you can find out how this examination should be conducted, and I think no one need have any trouble at arriving at a correct understanding in regard to sight and hearing of the pupils. The card of warning to be sent to the parents or guardians of the children, giving the name of the child with defective hearing or eyesight is also furnished. I can most heartily endorse what Dr. Twitchell has said in regard to refraction of the eyes and correcting these errors of eyesight; thus staying the progress of disease. I don't believe in placing lenses before young people's eyes unless it is necessary; pain and headache are undoubtedly due to error of refraction, and in this case the eyes should be corrected. If they do not have symptoms, I do not believe in correcting it.

I most heartily endorse what Dr. Cramton has said in regard to adenoid growth, and I don't know that there is anything we can do to relieve this condition of the tonsils and upper part of the throat. I think a large percentage of deafness is due to this same cause. By relieving it in the younger years, they can preserve good hearing.

Digitized by Google

Question.

Do you understand that the health officer has anything to do with conducting this examination of the eyes and ears?

Answer by Dr. Caverly.

According to law, the State Board of Health and the superintendent of education carry out and fulfill this law, and as officers under the State Board of Health, you are to see that the law is enforced.

Judge Fisher.

There are a great many teachers who are not competent to make this examination. It seems to me it will be a most excellent idea to have them instructed at the summer schools, that they may be able to carry out the tests at the beginning of the fall term.

Answer by Dr. Caverly.

They were last summer, and they will be this.

Question by S. W. Butterfield.

We are to understand that we are to have supervision of this law, and to see that it is enforced?

Answer by Dr. Caverly.

Yes.

TO THE SCHOOL TEACHERS OF VERMONT.

By Dr. Charles S. Caverly.

Section I. of Number 45 of the Acts of 1904 contains the following: "The superintendent, principal or teacher, in every school, during the month of September in each year, shall test the sight and hearing of all pupils under his charge and keep a record of such examination according to the instructions furnished; and shall notify in writing the parent or guardian of every pupil who shall be found to have any defect of vision or hearing, or disease of eyes or ears, with a brief statement of such defect or disease; and shall make written report of all such examinations to the superintendent of education as he may require."

This law is in harmony with a widespread movement in this country and is the result of knowledge gained from quite a large number of examinations of the eyes and ears of school children both here and abroad. It has been estimated by very well posted men that two thirds of the 15,000,000 children in the public schools of the United States have some defect of either eyes, ears, noses or throats.

Digitized by Google

There are, at least, two good reasons why we should adopt measures to detect these defects early in the child's life: one is because when detected early these defects may usually be remedied, and the other is that, undetected and unremedied, they are a grievous handicap to the child's mental growth, i. e. they interfere with school work. There are, of course, other arguments in favor of this movement, but the two I mention are sufficient excuse for the law we now have, and for its enforcement.

The objections to this law that have come to my notice are that it may add to the burdens of the teachers; that it may interfere with the routine school work, and that teachers are in no wise competent to test eyes and ears and examine noses and throats. As planned, I believe, by the educational departments of the state, it will not require work outside school hours; in other words, the teachers are to be allowed time for these examinations during the regular school hours. It will interfere in a small way with the school routine, but the time allotted to the work will be, even in large schools, less than is frequently given in order that children may attend the circus or the county fair. Ten minutes is to be allowed per pupil, which means, of course, that a school of thirty will require five hours of the teacher's time. Even if a full day is required, it is a small allowance compared with the benefits that may result, and cannot seriously derange the routine school exercises. A teacher may in a week, by using the last hour of her school day, accomplish the task.

As to the objection that it places work on the teachers for which they are not fit, it should be borne in mind that it is not sought to have the teachers diagnose nicely diseases of these organs or treat them. It is expected only that the teachers, by the application of certain easily applied tests, will discover *approximately* whether the eyes, ears, noses and throats of the children are normal and healthy. In case such tests *seem to reveal* any defect, the teacher's duty ends with giving parents or guardians the information that she believes there is disease and requesting that a physician be consulted. These tests are only such as any one of average intelligence can apply, and do not call for a minute familiarity with the anatomy, physiology or diseases of these parts.

Each school in the state will be supplied with the requisite charts, blanks, and record sheets for making these examinations and recording results, with explicit instructions for their use.

The examination of the eyes comprises the following details: The teacher will first, from observation, determine (a) whether the pupil habitually suffers from inflamed eyes or lids, (b) whether the eyes or head tire easily or become painful from study, and (c) whether the pupil appears to be "cross-eyed." She will then test the vision by a vision chart hung on the wall in a *good light* at nearly the level of the child's head. The child is seated twenty feet from the chart. In expressing the degree of vision a fraction is employed, of which twenty is always the numerator, and the denominator is the figure placed opposite the last line on the chart, a majority of whose letters the scholar reads correctly. Thus, if the child can only read with one

Digitized by Google

eye the line opposite which "50" is placed, that child's vision for that eye is expressed as $\frac{50}{50}$. It is not essential that teachers record these fractions. It is so easily done, however, and may add so much to the value of these examinations, that it is hoped they may make the records thus complete. Each eye is tested separately, by holding gently over, first one and then the other eye, a card, care being taken not to press upon the shaded eye. It is not essential that the teacher knows the significance of each of these details of the examination of the eyes. It is sufficient that she should remember that each *has* a significance and that an affirmative result along either of the above enquiries means defect or disease of the eye, calls for further investigation by a physician. It may not seem quite proper to include the nose and throat in this examination. The intimate relation, however, of the nose and throat to the ears, makes it necessary to consider these parts in any examination of the ears. Indeed disease of the nose and throat is a factor in a large majority of cases of deafness. A very casual study of the anatomy and physiology of the organ of hearing will show why this is so.

The external auditory canal leads from the outside into the bones of the skull and at a depth of a little less than an inch ends at the drum membrane. This membrane separates the external canal from a cavity called the middle ear, and the latter is in direct communication with the upper part of the throat by means of a tube (Eustachian tube). The healthy conduction of sound waves across the cavity of the middle ear depends largely on the healthy condition of this Eustachian tube. It serves, among other functions, to maintain an equilibrium between the pressure of the external air and the air in the middle ear. The mucous lining of this tube is a direct continuation of that of the throat and nose; hence the important bearing, disease of the lining membrane of this upper air passage has on the hearing. So head colds, more chronic catarrhal colds, all acute diseases of the throat and adenoids are common sources of deafness in children. The early detection and treatment of these diseases is of the utmost importance to the child. When thus discovered early, they may be treated with surer success, as far as the hearing goes, than in after life.

The details of ear examinations are these: The teacher, by observation and questioning, will determine (a) if the pupil is subject to earache; (b) if matter (pus) or foul odor comes from either ear; (c) if the pupil is subject to "head colds," and (d) if he is an habitual "mouth breather" (catarrhal obstruction of nose or adenoids). The hearing is then tested by placing the pupil at a distance of twenty feet in an *absolutely quiet* room, facing the teacher. Each ear is tested separately. The pupil is blindfolded and told to stop the ear not being examined with the finger. The teacher then asks the pupil questions that require more of an answer than "yes" or "no," in an *ordinary tone*: such questions being asked that the answers will *surely* indicate whether the questions were heard. In case the examinations reveal *evident* or *possible* disease of any of the organs mentioned, a record is made in the blank form for reports. This blank form is:

Digitized by Google

No.	Name of Pupil.	If Eye, Ear, Nose or Throat is defective, write the name of the organ; in case of Eye or Ear, indicate which.	In case of defect, was notice sent to parent or guardian?
1	John Smith	Yes, eye. R. ‡‡ L. ‡‡	Yes.
2	Mary Brown	No.	No.
3	Henry Robinson	Yes. Nose or throat.	Yes.
4	John Doe	Yes, ear.	Yes.

Having determined that certain pupils *seem* to have defects of one or more of these organs the teacher then fills out the "notice to parents" in this form:

NOTICE TO PARENTS OR GUARDIANS.

From an examination conducted in accordance with No. 45 of the Acts of the General Assembly, 1904, it is believed that your child, ————————, has some Eye, Ear, Nose, Throat Defect, for which your family physician or a specialist should be consulted at once.

Trusting that the matter may have your early and careful attention, I remain

Very respectfully yours,

Date ....

..... School. Teacher.

Town of .....

In this blank those words are crossed out which do not apply to the case. For instance if it is John Smith the words "ear, nose and throat" are crossed out. In case of Henry Robinson "eye, ear" are crossed. This "notice to parents" should never give offense. It is a suggestion, a request, not a demand. Parents may ignore it, but the responsibility is on them. Teachers should take occasion to impress upon such parents, as opportunity arises, the reason of the suggestion made to them.

There can be no possible doubt of the results that will follow the general enforcement of this law. These results are bound to be in the direction of improving our school children mentally as well as physically. Sight and hearing have a very close connection with mental development. Whatever improves them is bound to increase the efficiency of the public school.

Digitized by Google

FOOD INSPECTION UNDER OUR FOOD LAW.

By C. P. Moat, Chemist to Vermont State Board of Health.

Since the last session of the school for health officers, at which we talked of pure food and laws for obtaining the same, we have had a new food law enacted and are now engaged in carrying out the provisions of that act. In this paper I will try to give you some idea of how we are carrying on the work, details of some of our rulings on the various products, why certain foods are not up to standard, and other matters pertaining to the subject. As I suppose you are all more or less familiar with the new food laws, I will not give them in detail.

Our methods used in the enforcement of the law are as follows: The collection of samples has been mainly carried out by the State Board of Health and their agents, the health officers, who have purchased in the open market samples of some of the food products which were suspected of adulteration. These have been sent to the Laboratory and examined. The result of the examination is then sent to the secretary of the State Board of Health who notifies the dealer of the result on a notice stating that the same does or does not meet the requirements of the Vermont food laws.

The warning notice sent to the dealers, when goods bought of them are found to be adulterated or not to meet the requirements of the law, is not to be regarded as any reflection on their honesty or integrity. The notice is sent to them to inform them of the fact that the article does not conform to the standard established by the State Board of Health under our food laws and thus warns them against the further purchase and sale of the same. It gives them the opportunity of bringing the results to the attention of the wholesaler and manufacturer and allows them to specify in their future orders that the goods shall meet the requirements of our laws. This is the only means that we have of reaching the manufacturers who are outside our state and we desire the help of the local dealers to this end so that we may protect them, as far as possible, against these commercial frauds by giving them information concerning their nature. We believe that the dealers in the state are desirous of complying with our laws and wish to sell only standard goods and we wish to have our food laws aid both them and the consumers. Besides notifying the dealer directly, the results of our work will be published in our bulletin and thus will bring to the attention of the public a list of foods found to be adulterated or below the standard. Furthermore, we are in hopes that the newspapers of the state will spread these lists still further by printing the tables of the bulletin. By this method, the results will reach the eyes of the consumer and ought in a short time to remove from our markets all goods not up to standard. These methods have had such an effect in New Hampshire. We want to secure the good will and active coöperation of all tradesmen in food products rather than antag-

Digitized by Google

onize them by ill advised prosecutions in cases of unintentional violation of the law and we believe that when the dealers understand that we wish to protect the honest dealer from impositions of the manufacturer and assist him in keeping a stock as free as possible from unlawful goods, they will be our firmest friends and assist us in everyway to gain the desired effect.

I quote the following from the fifteenth annual report of the food commissioner of North Dakota regarding publicity: "One commendable feature in the food law of the state is the required publicity in an official way. Nothing will drive wrongdoers to correct evils more quickly than publicity. Let the public know that this or that manufacturer's goods are not pure but adulterated and the discriminating public will refuse to purchase and the retailers no longer find it profitable to handle the products. Another year's experience convinces me more thoroughly than ever that publicity is the only means whereby the evil of adulteration, substitutions and sophistication can be excessively combated. The North Dakota food law requires that a list of adulterated and misbranded food products, the names of the brands, the name of the manufacturer and nature of adulteration, shall be furnished to the county auditor for each county of the state twice a year, during the months of January and July, and that the said auditor shall publish these results in the official county paper for two successive issues, thus bringing the matter directly to the attention of the reading public in every part of the state."

Our new law carries no appropriation and gives the power of collecting samples to the State Board of Health and the health officers, who are to act as inspectors under the direction of the state board. While this is not as good a system as one in which there is an inspector who covers the whole state in his trips, still we have made a beginning, as you will see from the table which was published in the June Bulletin. I will give the summary of that table here with a few additional figures bringing it up to the present time.

Articles Examined.	Standard Quality.	Adulterated, or Varying from Legal Standard.	Total.
Maple Sugar and Syrup	40	6	46
Oysters	10	2	12
Baking Powders	10	8	18
Coffee	4	0	4
Lemon Extracts	4	15	19
Vanilla Extracts	2	7	9
Olive Oil	2	0	2
Butter	1	0	1
Lard	1	0	1
Milk	4	0	4
Miscellaneous	8	12	20
Total	86	50	136

Digitized by Google

The rulings by which the foods in the table were judged, I shall take up in detail later. Our law states that the standard of food products shall be that of the United States department of agriculture, but, as at present the department has not published standards for but few goods and until they do, we have made certain rulings to facilitate the enforcement of the law according to the provisions of Section XVIII. of the Act 143. These rulings are based on special laws passed in other states where they have proved to be of value and from the United States pharmacopœia.

Education of the people and honest labelling are in my mind the foundations of a systematic campaign for pure and wholesome foods. We must instruct the people what goods are of standard quality, for very few of our necessary foods contain anything injurious to health except in the case of antiseptics and coloring matters, which class of substances I will take up later on, and how they are being defrauded from a financial standpoint. Then, when goods are honestly labelled, the consumers may buy what they desire without being deceived or defrauded. Certain manufacturers say "the people never look at the label, why put on the names of the constituents." Why not, I ask, if there is nothing present that they are ashamed of. Certainly the wornout phrase "Absolutely Pure" means nothing to most manufacturers, but when goods are correctly labelled and the people learn the label reading habit, it will mean that the consumers will have a chance to buy what they want. Many popular fancies form the basis of many claims of the manufacturers regarding adulterations. "The people call for it," they say when they are called upon to stop coloring certain foods. Would the consumers call for it if they knew that the coloring was only a scheme to make the goods appear of better quality than they really are? Facts of this kind must be brought before the people and then let them decide themselves what they want by being able to judge the contents of a package from its label.

Dr. Wiley in an address before the Philadelphia County Medical Society says, "I believe the application of the principle of honesty would be the best food law that could be enacted. If I were to write a food law in one sentence, it would be that nothing unwholesome should be added to foods and that every food product should be marked and be exactly what it is said to be." This is a bit higher ideal than we can expect to attain at present but when we have the package so marked that the people know what they are buying, we are accomplishing something that will lessen deception and fraud.

PRESERVATIVES AND COLORING MATTER.

I will not speak of the harmfulness of these products as Professor White will discuss in detail this phase of the subject, but I will consider mainly why they are put in. The main reason for the use of both of these articles is to cover up inferiority. The manufacturers claim in many cases that the people demand them. Why? let us ask. Because they now have a taste created by use of these colors and are accustomed to seeing them. They surely

Digitized by Google

make some foods more attractive as they cover up deception by making goods appear better than they really are. Let us educate the people to demand uncolored foods. Again quoting from Dr. Wiley, "I do not believe it is a good thing for us to eat continuously even a small quantity of colors which may be regarded as harmless. They are not foods, are not as a rule, digestible and have no relation to the chlorophyll and its derivatives which are the natural coloring matter of vegetable life. The rights of the consumer are paramount concerning the uses of antiseptics in foods. Any one has a right to eat anything he pleases but he has no right to make another person eat the same thing. Foods should be labelled so that the purchaser is notified of coloring matter and preservatives. There also ought to be an opportunity to buy foods that are not preserved." Certain manufacturers claim that the usage of such small quantities of preservatives is beneficial by preventing any development causing ptomaines but whether this is or is not so, surely the label should so state the presence of the preservative in order that delicate or sickly people may not buy them unknowingly. Our ruling does not allow goods containing preservatives to be sold in this state and while we are given permission to issue permits for the use of such preservatives as are not detrimental to health, I do not think it wise at the present state of experimentation with these products to modify the ruling. If the bureau of chemistry of the department of agriculture determines that certain preservatives are not harmful, then it will be time to allow their use but while the question is still an open one, it is best to be on the safe side.

MAPLE PRODUCTS.

We have examined forty-six samples of these goods when first placed on the market this season, but have not collected any samples of bottled goods put out by the bottling houses and which are more apt to be suspected of adulteration. I suppose that there is little use in talking much about maple products to Vermonters. You all know more about the manufacture of this product than I do, so all I will say is regarding its adulteration. Vermont, the first state in the Union in the production of maple goods, should take some steps towards making the name "Pure Vermont Maple Sugar or Syrup" mean just what it says. At present it is a trade name used by dealers everywhere and it brings the name of the state into disfavor. This commodity is not a necessity but a luxury and as such can call for a good price and help our people financially. We can stop the sale of adulterated goods here in the state, but it should bring a blush of shame to our cheeks to see published in food reports of other states adulterated maple goods bearing the name and address of Vermont packers of "Pure Maple Goods." The day is past, thanks to the good work done at our experiment station, when granulated sugar and syrup of the same can be dumped into maple goods without detection. Let us use the honest label on this product and see to it that nothing is sent out of Vermont which is not correctly labelled.

Digitized by Google

BAKING POWDERS.

These articles have no food value in themselves, but are simply used for the purpose of bringing about by chemical means the aeration of bread, cake, etc., by means of a gas. They consist of an acid and an alkaline constituent and are prevented from deterioration by the addition of some inert material such as starch. The alkaline principle of nearly all baking powders is bicarbonate of soda while the acid principle is one of three classes from which the powders derive their names, viz.: Tartrate powders containing potassium bitartrate or tartaric acid, phosphate powders in which calcium acid phosphate is the acid principle, and alum powders containing for an acid principle sulphate of aluminum, in potash or ammonia alum or in the mixed sulphates of aluminum and sodium. Besides these there are mixtures of complex composition of the three main classes. The adulteration of baking powders is a question that is subject to much controversy. I will not dwell upon the merits of the various kinds which are so beautifully pictured by their promotors nor on the harmfulness of the brands of their competitors as the question of the wholesomeness of these articles is still an open one. We do not consider this in our ruling, but regard the correct labelling and stating the constituents as placing no hardship on the maker and as the value of a product of this kind depends on the amount of gas, we ask that the powder give ten per cent of its weight of Co^2 on boiling with water. Three of the eighteen samples examined were below the standard in Co^2, while eight were not correctly labelled, not having labels bearing the names of the ingredients. The following resolutions have just come to my hand and they agree with our rulings.

The following resolutions regarding the standard for baking powder and method of labelling were adopted at the annual convention of the state dairy and food departments at their St. Louis meeting:

"Resolved, 1. That all baking powders shall be free from deleterious, injurious or unwholesome substances.

"Resolved, 2. That they shall contain no substances which are not necessary thereto as active agents except starch or sugar, which are recognized as essential and necessary.

"Resolved, 3. That certain rigorous or fixed standards be recommended which shall determine the minimum amount of carbonic acid gas.

"Resolved, 4. That all packages shall bear a correct statement of their composition in plain, legible type and language easily understood by the average purchaser and consumer and also the name and address of the manufacturer or purchaser.

"Resolved, 5. That no package shall bear any statement which will deceive or tend to deceive the purchaser."

CATSUPS.

These have not received our attention as yet, but judging from reports from other states, most of them are preserved and colored. This is a case

Digitized by Google

where the people have the habit of thinking a red color adds to the value of the product. Who ever saw homemade catsup have anything but a brownish color and why need anything better than the homemade standard. Still if the consumers desire them colored and preserved, let it be stated on the label to protect those of us who do not care for it. The cheaper varieties of catsups are made from fermented and inferior materials and it is largely for this reason that antiseptics and coloring matters are so commonly employed in the commercial brands.

FLAVORING EXTRACTS.

Considering the large sale of these goods, there is probably no class of food products more grossly adulterated. Vanilla and lemon are the most important of these preparations. For both of these, our standard is taken from the United States pharmacopœia.

A true vanilla extract is made by macerating vanilla beans with sugar and extracting the mass with dilute alcohol. The commercial extracts are allowed to age in wood before being put upon the market. Glycerine is sometimes used in place of sugar but this is of little importance where the proper quantity of good quality vanilla beans are used and sufficient strength grain alcohol to remove all the flavoring ingredients of the beans. Many varieties of vanilla beans are on the market varying in price from $1 to $15 per pound.

The adulteration of vanilla extract consists in substituting wholly or in part the inferior and cheaper tonka bean for extraction, or the addition of solutions of artificial coumarin and vanillin to weak extracts, or a totally artificial product colored with coal tar dye or caramel is sold for the real article. A pure vanilla extract has a dark red brown color and a characteristic sweet fragrant odor. The leading fragrant principle of vanilla bean and of true vanilla extract is vanillin, a definite chemical compound, but certain resins and other extractive matters soluble in alcohol are needed to give the fragrance, color and food value of the true vanilla extract. An extract made from tonka has a characteristic odor and is useful for flavoring purposes, but on account of its cheapness it should not be substituted for or sold as vanilla extract. Extracts containing synthetic vanillin, tonka or coloring matter must be so marked and shall not be labelled pure extract of vanilla or any wording to that effect to be legally sold under our law. All flavoring extracts must bear the name and address of the maker.

The extract, spirit or essence of lemon of the United States pharmacopœia is a five per cent solution, by volume, of oil of lemon, in a strong ethyl alcohol, together with the flavoring, coloring and other extractive matters of the lemon peel. Extracts made according to the United States pharmacopœia formula have nothing to be desired and are generally accepted as a standard of purity and strength for commercial extracts. Lemon oil is obtained by various processes from the fresh peel of the ordinary lemon and is produced principally in the countries of Southern Europe bordering on the

Digitized by Google

Mediterranean Sea. Lemon peel, as is implied by the name, is the rind of the ordinary lemon. It has a fragrant odor and a peculiar bitter, aromatic taste and is essential in the preparation of the best extract. While lemon oil is expensive, the most costly ingredient of lemon extract is the alcohol and makers seeking to reduce the cost of preparation look to some method of using less alcohol. But lemon oil is not soluble in water or dilute alcohol and is thrown out of solution by the addition of water. To get around this difficulty the makers have used the so-called terpenless extract. This may be explained as follows: Lemon oil is not a simple substance but a combination of several ingredients, the exact nature of all of which is not known, but all of which are needed to produce the delicate flavor and aroma characteristic of lemon. A very small proportion of the combination is the aldehyde citral which is recognized as the chief odor bearer of the oil. This, the manufacturer of the terpenless extracts seeks to extract by churning the oil with dilute alcohol and finally coloring the product to imitate the true color. The product thus obtained has a strong odor but the odor of the citral is very plain and distinct and is not the fragrant combination of lemon oil. The United States pharmacopœia standard is not too high as is shown by the fact that there are several commercial brands on the market which exceed it, but most of the cheap varieties of lemon extracts on the market are very poor imitations of the true United States pharmacopœia extract and some do not even contain lemon oil. We have not found any extracts that contained methyl (wood) alcohol, but reports from the western states show that this criminal practice has been used there.

The miscellaneous flavoring extracts are of many kinds, most of which are purely artificial and should be so marked on the label.

FRUITS, JELLIES, JAMS, ETC.

These have not been examined as yet but our ruling is as follows: Fruit jellies, fruit butters, preserves, canned fruits, fruit conserves, confections, fruit juices and syrups, etc., must consist of the fruit specified on the label, preserved only with cane sugar, with or without the addition of glucose and must not contain artificial flavors, coloring matters, or preservatives. If such articles contain any substitute for the fruit or any injurious material to make up bulk or weight, any artificial flavor, color or antiseptic, or any substance not naturally occurring in such fruits except spices or other wholesome natural flavoring materials, they shall be considered to be adulterated. We suppose the cheaper brands will correspond to the grades found in other states and therefore will not comply with our law.

MILK.

We have not undertaken any systematic examination of milk as yet. There is no reason here in this state why milk should be anything but pure, and later on the milk supplies of the larger towns and cities will have our atten-

Digitized by Google

tion. The city of Burlington has a special ordinance regarding the examination of milk, but it is not enforced.

OYSTERS.

The practice of adding boric acid to oysters has been carried on in other states, but the few samples that we examined were mostly pure. There is no excuse for adding preservatives to such goods and especially in our cold climate. It is done to save ice and to allow careless handling of the goods.

ALCOHOLIC BEVERAGES.

No goods of this kind have been examined under the direction of the health officers, but we have examined many (ninety) for the various license commissioners and of this number only very few conform strictly to the United States pharmacopœia standard which the license law calls for. This is a very high standard and is higher than the provisional standard set by the A. A. O. C., which we should use for our food work. Adulteration of distilled liquors in most cases is done by watering them, and from the health and temperance point of view this is not harmful but quite the reverse. But from the economic side, deception is practiced. In this age of rush, most of the distilled liquors are blended with glycerine or sugar to take away the raw taste and to conceal the age.

Beers and ales and malt liquors are sometimes preserved, which is against our law. This covers the principle articles that we have examined and I hope that it has shown what we have done for a beginning. We have made a start towards pure food and our lack of funds must be partly made up by the enthusiasm of our friends, and to this end I would ask for the co-operation of all, the dealers, the grocers, the health officers, and consumers, that we may bring about the education of the people and the correct labelling of the food products sold in Vermont.

H. L. White.

The subject of food is one in which we are all interested. Every man is supposed to be more or less interested, and I suppose the ladies are, too. We can get along with cerebro-spinal meningitis, but we are not able to get along very well for a long time without food, and pure foods and the discussion of pure foods, is one which is of great importance, not only in the state, but in the country at large. In a few minutes I wish to call your attention to the physiological side of the question. I will not devote much time to those things which are in themselves perfectly harmless—as water, salt, vinegar, starch and spices—those things we accept as doing no harm, and don't call for any attention except from the standpoint of fraud.

The second question is in regard to coloring substances—and there is a great deal of discussion throughout the country regarding the harmfulness

Digitized by Google

or harmlessness of coloring substances. It is claimed by many that in the amount in which they are used they are practically harmless. There is no question but that certain ones are harmless. But we *do* know this: that a great many of the coloring substances are closely related to creosote and carbolic acid, which are chemically very much alike. It would seem as though a coloring substance which ranks pretty close to creosote and carbolic acid might not be exactly harmless. This fact is recognized by the National Confectionery Association, and they have published a list of coloring substances that are considered harmful, and all members of the Association are forbidden to use any of the coloring substances named in that list.

Now, in regard to preservatives, which is the third class: The use of preservatives is seemingly on the increase throughout the country, and it is thought by manufacturers that it is necessary to put just a little bit of preservative of some sort into food products. Going about into some of our slaughter houses I have noticed on the shelves cartons of boric acid, and I find that the butchers are in the habit of using it in the meats. We find that at the present time our products of all kinds have some sort of a preservative added to them—even to things which ought to preserve themselves —*in other words,* that the use of these preservatives is rather general, and the amount used is considerable. I have taken some figures here, which show something of the extent to which coloring matters and preservatives are used, for instance:

The State of Massachusetts for the year ending September 30, 1903, condemned 17 samples of vinegar, artificially colored; 25 jellies,—jellies not only colored, but preserved,—some were colored, and some preserved, and some were both; 6 samples of lemon extract; 6 samples of grape juice; 3 of cider, and quite a good many of milk and cream. In this country—in this state, at least—we don't estimate the amount of preservatives, but in Great Britain they do estimate in each sample of preserved foods the amount of preservative. Here are some of the results:

In a pint of milk, from 6 to 10 grains of boric acid; from 50 to 90 grains per pound in butter; orange wine, from 6 to 26 grains of salicylic acid.

All through this country, and all other countries as well, there are certain preservatives which are recognized as being harmless—having been used for a long time—such as salt, sugar, spices, smoke, and vinegar, and are perfectly harmless. They are the older and the common preservatives. There is a new class coming into the market, and their harmlessness is questioned: Salicylic acid, benzoic acid, formaldehyde, boric acid, borax and sodium sulfite; these are the principal ones which are coming into use in such an alarming degree. I have taken pains to look into this matter, and I find that there is a great difference of opinion in regard to the use of these preservatives and coloring substances. The manufacturers claimed that in the amounts in which these preservatives and coloring matters are used they are perfectly harmless; that the people want the colored food—it looks better, and that they are willing to eat two or three kinds of preservatives to get that appearance. They claim, in regard to preservatives

Digitized by Google

that no one has as yet proven absolutely that it is harmful, and that they think it is better to use preservatives than to eat spoiled food.

Now, in regard to the physiological phase of this coloring matter: It has been gotten at in three different ways. The best work along this line was by the Dakota state chemist, and which was reported at St. Louis. Taking test tubes and putting into them a composition, then adding coloring matter; first he took the best quality of dyes which he could find and judged of their effect by the length of time which the digestion was delayed. In some cases the digestion was delayed from 6 to 25 minutes. Then he repeated the experiment, taking commercial dyes, and found that digestion was delayed from 6 to 40 minutes.

Now, in regard to preservatives: The action of preservatives has been investigated by artificial digestion to some extent. The best known experiments are those by Dr. Wiley, to ascertain the effects of boric acid. He took a certain number of men and gave each day, a quantity of boric acid, for periods ranging from ten days to six months. These men were in good health, and were examined by a physician every day. They were given an amount varying from 7½ to 60 grains of boric acid per day. This treatment extended, as I said before, from ten days to six months, and he found that by giving 7½ grains for a considerable length of time did not affect all alike; some were affected in a slight degree with headache. When he increased the amount to about 40 grains per day, there was trouble at once. A dull, persistent headache and general discomfort. When he increased the dose to 60 grains per day, a great many had to drop out of the experiment.

It all goes to show that small quantities of boric acid, given for long periods of time, while it might not cause disturbance in all persons, will affect some. Larger quantities for a short time have a greater influence; and in the experiment above mentioned about 80 per cent of the men feeling the effect of the treatment and being affected in various degrees.

Another preservative, used to a considerable extent, is sulfite of soda, and that is used to quite an extent in hamburg steak, giving to it a nice red appearance, which seems to the consumer a sure index to its freshness.

While there has not been much work done in this line, Dr. Harrington fed this also to animals. He took six kittens and experimented on them for five months. Five of them were fed on meat which contained this preservative. At the end of the five months the kittens were killed; the kidneys of the five kittens which were fed with the meat containing sulfite of soda were highly congested, while the kidneys of the sixth kitten were normal in appearance.

In regard to formaldehyde and its action upon the human economy; It is the experience of numerous investigators that its harmfulness lies in the fact that it causes considerable delay in the time of digestion; and its action upon food materials, particularly upon meats and upon the proteids in milk, is to render these proteids insoluble, and being insoluble they are acted upon with difficulty by the digestive ferments.

In summing up this matter as I have found it, I understand there are

Digitized by Google

three ways in which the various coloring matters and preservatives affect the human machinery:

First, there is delay in the time of digestion—I don't know whether it is hurtful or not, but certainly many of these things do delay the process. Second, there is quite often irritation of the stomach and intestinal tract, and undoubtedly many of our mild forms of indigestion may be attributed to this. Third, there is certainly irritation of the kidneys.

Those three things seem to be what is discovered so far in the use of our coloring matters and preservatives.

Dr. Holton.

These gentlemen seem to have covered the ground pretty thoroughly in regard to the work. It has devolved upon the State Board of Health, and incidentally upon the health officers, to collect specimens for examination. The legislature did not make any appropriation for paying for the samples collected, hence we have exercised great care, lest we exceed our ordinary expenses. That is the reason why you have not been asked to collect samples—we have no money to pay for doing it. Most of the samples have been collected for the Laboratory under the direction of the State Board of Health or members of the State Board themselves. We have, in a few instances, asked the health officers to collect samples of maple sugar.

We have had several letters from manufacturers of different products, who say, "We do not quite understand your law, but we should be very happy to send you some of our product for examination." We invariably say we are obliged to them, but we want to buy in the open market, so there will be no question as to what the public are buying.

The harmlessness of certain adulterations was touched upon by Mr. Moat. In the matter of wine or other stimulants; in case of sickness you buy a pint of brandy and you get half water; you are not getting anything that hurts you, but you are paying for something that you do not get, and that is not right. Every consumer has a right to know what he is buying; he should not be made to buy what he does not want. One firm manufactures extract of lemon; they are using a washed oil of lemon, and they want to know if they cannot label it "pure extract of lemon" because it has nothing deleterious in it. Our reply is: "You must put on your label just what it contains; you cannot label it 'pure' when it is not pure."

Manufacturers of various things, from other states, write, inquiring about the law, a copy of which is always sent them. One firm to whom three copies of the law had been sent at three different times afterwards professed that they did not know what the law was. Some want to discuss the harmlessness of their production, or what is being done in some other state. To all this there is but one reply, "If your goods are to be sold in Vermont, they must conform to Vermont law."

You have no idea how large is the volume of correspondence we receive upon these subjects. We hope the next legislature will make an appropriation for the carrying on of this work, in order that much more can be ac-

Digitized by Google

complished. We have been told that certain ingredients could not be found in certain products by the best chemists. Evidently we have a chemist who can find what there is in these compounds. Keep in mind that adulteration, deleterious or otherwise, is included in the law. It is argued that as long as it does not do any harm to any one it does not make any difference. The people are paying for something they do not get, and that of course is simply fraud, and all these men want is to be able to put on a label which will cover up something. We have found that the manufacturers of Vermont are invariably desirous of doing what is right. Some send into the Laboratory, saying, "We have purposed to put this product on the market, and if it is not according to the law, we do not want to put it out upon the market for our home people." We go on the principle that the local dealer or grocer does not want to sell anything that is not right, hence in our report of examinations made we say: "We have this specimen of ————, bought of 'Blank,' which is manufactured by ————, which does not come up to the requirements of the law. Now we do not think you want to sell anything that is not right." Hence we do not prosecute that dealer, but if he continues to sell, we shall have to prosecute him for selling adulterated goods; there is nothing left for us to do, under the law. And here comes up a question: A large number of baking powders have been condemned by our examination; the grocer has bought them; will he have to throw them away? He cannot sell them. The manufacturers say: "Don't you think it is rather hard on the grocers of Vermont; don't you think you ought to make an exception and allow them to sell out what stock they have on hand?"

How shall we know when he has sold the stock out? We might get samples next January, the same as last January, and when we ask him about it, he would say, "My old stock is not yet exhausted." How are we to know when his stock is gone. The way to do is to send them back to the manufacturer, and say: "You sold me these goods for the real thing; I bought them for pure goods. It was fraud on your part in selling them to me, and you must replace these adulterated goods with such as meet the requirements of the law." Is not that right, as between man and man?

In the matter of maple sugar: I think two of the adulterated samples came from outside the state. They buy the pure maple sugar here in the state and ship it down to Boston, or somewhere in Massachusetts, and they adulterate it with various things; I understand a hundred gallons of pure maple syrup, when they get through, would be a thousand gallons. They put the labels back on the bottles, and some of it comes back into Vermont, and it sells for pure maple sugar. You cannot get hold of those dealers, they are not in the vicinity. We can have an understanding with the Massachusetts, New Hampshire, and New York men. The makers of fraudulent goods do not want Congress to pass a pure food law. They have millions of dollars invested in the manufacture of these fraudulent goods, and they can exercise great influence; they can employ legal talent in making Congress believe that it is a pretty bad thing to pass such a law; they will

Digitized by Google

see their member of Congress, or their senators, and get them to give them any information which they may be able to in regard to pure food measures, which they can use for the purpose of preventing the passage of any measure which they think would interfere with their business. What of the purchasers who are defrauded?

In closing, Mr. C. P. Moat said:

"Only yesterday I had a North Dakota Bulletin sent me, but it would take too long now to peruse it. The commissioner says in his report for 1903 that one of the most notable features of the new law of the state was the publicity which was given to certain adulterated manufactures.

"We have let the public know that this or that manufacturer's products are not pure, and the dealers now no longer find it profitable to handle the goods. Publicity is the only means whereby the evil of adulteration can be successfully handled."

BAKING POWDERS.

Lab. No.	Brand.	Manufacturer.	Purchased at	% Co_2	Remarks.
33741	Sovereign.	The Union Pacific Tea Co., New York.	Rutland.	11.49	Standard Quality, new label.
34381	Gold Star.	Berry-Hall Co., New York and Burlington	Submitted by Makers.	13.50	Standard Quality, new label.

LEMON EXTRACTS.

Lab. No.	Brand.	Manufacturer.	Place of Collection.	% Lemon Oil.	% Alcohol.	Remarks.
34887	Baker's Pure	Baker Extract Co., Springfield, Mass. Portland, Me.	Montpelier	8.12	85.37	Pure
34894	Baker's Pure	Baker Extract Co., Springfield, Mass. Portland, Me.	Montpelier	8.40	85.09	Pure
34912	Baker's Pure	Baker Extract Co., Springfield, Mass. Portland, Me.	Waterbury	8.37	85.12	Pure
34913	Baker's Pure	Baker Extract Co., Springfield, Mass. Portland, Me.	St. Johnsbury	8.37	85.12	Pure
34933	Baker's Pure	Baker Extract Co., Springfield, Mass. Portland, Me.	Randolph	8.19	84.75	Pure
34945	Baker's Pure	Baker Extract Co., Springfield, Mass. Portland, Me.	St. Johnsbury	8.28	84.66	Pure
34956	Baker's Pure	Baker Extract Co., Springfield, Mass. Portland, Me.	White River Jct.	8.48	85.06	Pure
35146	Baker's Pure	Baker Extract Co., Springfield, Mass. Portland, Me.	Burlington	8.12	84.51	Pure

Digitized by Google

MAPLE PRODUCTS.

Lab. No.	Maker.	Sold at	% Total Ash.	% Soluble Ash.	% Insoluble Ash.	Alkalinity of Ash on 5 Grains Material.		Remarks.
						Soluble.	Insoluble.	
34270	G. A. Cheney, Plymouth	Submitted by Maker	.88	.38	.55	2.30	5.45	Pure
34406	Miles McMahon, Stowe	Stowe.	1.00	.59	.41	3.00	4.40	Pure
34409*	A. C. Slayton, Stowe	Stowe	.67	.48	.19	2.65	2.45	Pure
34448	——— Colebrook, N.H.	St. Johnsbury	1.19	.41	.78	2.55	6.80	Pure
34449	— — Keir, Craftsbury	St. Johnsbury	1.54	.56	.98	3.60	8.50	Pure
34450	—— —— St. Johnsbury	St. Johnsbury	.38	.18	.20	1.15	2.35	Adulterated with Cane Sugar and so stated on label
34451*	Gray & Robinson,	St. Johnsbury	.80	.50	.30	3.10	3.50	Pure
34770*	Submitted by O. E. Wilson	Highgate Ctr.	.68	.29	.39	1.90	4.80	Pure

BOTTLED BEVERAGES.

Lab. No.	Brand.	Manufacturer.	Procured at	Remarks.
34817	Delatour-Ginger Ale	A. C. Schuyler, New York City	Burlington	Pure
34818	Delatour-Sarsaparilla	A. C. Schuyler, New York City	Burlington	Pure
34819	Orange Phosphate	F. P. Dalzell, Cold Spring, N. Y.	Burlington	Pure
34918	Aromatic Ginger Ale	Murdock & Freeman, Portland, Me.	Burlington	Pure. No name on label
34919	Vermont Cycle Ginger Ale	C. H. Eddy & Co., Brattleboro, Vt.	Burlington	Pure
34920	Belfast Ginger Ale	Cautrett & Cochrane, Dublin, Ireland	Burlington	Pure
34921	U. S. Club Sarsaparilla	Puritan Carbonating Co., Millis, Mass.	Burlington	Contains Salicylic Acid
34922	U. S. Club Ginger Ale	Puritan Carbonating Co., Millis, Mass.	Burlington	Contains Salicylic Acid
34969	Pan American Orange Phosphate	J. H Sutliff, Albany, N. Y.	Burlington	Not preserved; colored with Coal Tar Dye
35077	Belfast Ginger Ale	C. H. Eddy & Co., Brattleboro, Vt.	Brattleboro	Pure
35122	Chicquot Club Ginger Ale	Chicquot Club Co., Millis, Mass.	Burlington	Preserved with Benzoic Acid
35316	U. S. Club Ginger Ale	Puritan Carbonating Co., Millis, Mass.	Burlington	Pure

*Syrups.

Digitized by Google

VANILLA EXTRACTS.

Lab. No.	Manufacturer.	Brand.	Place of Collection.	% Vanillin.	Coumarin.	Remarks.
34540	Saratoga Extract & Chemical Co., Saratoga Springs, N. Y.	————	Hardwick	.200	Present	Coumarin present
34558	T. Metcalf Co., Boston, Mass.	Water White	Submitted by Maker	.250	None	Artificial

SUMMARY.

Articles Examined.	Number Found To Be of Standard Quality.	Number Adulterated or Varying from Legal Standard.	Total.
Baking Powders	2		2
Bottled Beverages	7	6	13
Lemon Extracts	8		8
Vanilla Extracts		2	2
Maple Products	8		8
Milk	3	5	8
Gluten Flours		3	3
Extracts Examined for Makers	1	5	6
Total	29	21	50

Digitized by Google

FILTRATION OF WATER.

H. W. CLARK.

Purification of water supplies by sand filtration is not a recent addition to sanitary science, not a new way of preventing disease and saving life. For more than sixty years sand filters have been in operation in Europe. In the year 1839 filters were first built for the city of London. In 1855 the city had thirty-seven acres of filter beds, in 1875, seventy-seven acres and at the present time more than 100 acres. Berlin, Germany, built water works and filters in 1856, forty-nine years ago, and at the present time practically all the important cities of Great Britain and Germany have filtered water wherever this water is drawn from a surface source. Besides this, a number of cities and towns in France, Holland and Belgium and even Russia filter their public water supply. The first sand filter in America was constructed at Poughkeepsie, N. Y., in 1872 and was 1.36 acres in area. This filter with improvements is still in operation. A small filter less than an acre in area was constructed at Hudson, N. Y., in 1874, but after that date the introduction of sand filters for the purification of water supplies came to a practical standstill in America for nearly twenty years. Through all these years public water supplies increased enormously in number, but the chief object seemed to be to find a sufficient volume of water with little regard to its purity or safety for human use. In fact, the benefits from pure water and the danger of polluted water was not generally comprehended. The real beginning of the modern impetus and desire for pure water was given by the state board of health of Massachusetts in 1887. In that year the Massachusetts board began the operation of an experiment station at Lawrence, the chief objects of which were studies upon the purification of sewage and the filtration of water; and this station is still in operation. The first experiment on water filtration was begun in 1888, and papers in regard to this work have appeared annually since 1890 in the reports of the board. The first filter put into operation was constructed of gravel, sand and loam and while producing a colorless water, practically free from organic matter and bacteria, could not be operated at a rate high enough to be of practical value. Following this many other filters were started, these filters being constructed simply of sand over gravel and pipe underdrains. Practically all the important features in regard to the purification of polluted waters of the character found in the New England states have been studied at this station.

As a result of the work at the experiment station, the Lawrence city filter was constructed in 1893 and the agitation of the subject there was a large factor in prompting such communities as Pittsburg, Louisville, Cincinnati, New Orleans, Philadelphia, Providence and Washington to begin investigations in regard to the purification of their own water supplies by sand filtration or to the construction of filters without local investigation. At

Digitized by Google

many of these cities the investigations were in charge of men who had had more or less experience at the Lawrence station.

When the first water filters were constructed in England, as long ago as 1839, the object of the builders was to improve the appearance of the water; that is, to remove color and matters in suspension. It was not at that time recognized that disease germs were carried by public water supplies or that if they were that these germs could be removed by the passage of water through sand. It was not long, however, before the relation between the health of a city and the efficiency of the filters was recognized. About twenty-five years ago methods of determining the number and kinds of bacteria present in water began to be generally used and since that time the study of the efficiency of sand filtration has been thoroughly developed, and the effect of pure water upon the health of a community has become generally understood.

A sand filter is a very simply constructed affair; it is in its essential features simply a body of sand of sufficient thickness, say from three to five feet, underlaid with a few inches of coarse and fine gravel or broken stone and with a proper number of pipe and gravel underdrains to collect the water that passes down through the sand and with this filtering material enclosed by a suitably constructed concrete masonry basin with tight bottom and sides and, in our climate, covered with a roof also. Almost any grade of sand can be used with good results, if the filter is under proper superintendence, but the work at the Lawrence experiment station and elsewhere has shown that grades of sand of an effective size between 0.20 and 0.40 millimeter are to be preferred. By effective size is meant that ten per cent by weight of the sand grains is less than a certain diameter; that is to say, if the sand has an effective size of 0.20 millimeter, ten per cent by weight of the sand grains have a diameter less than 0.20 millimeter. A filter bed constructed in the fashion outlined and operated carefully at regular and even rates is capable under proper conditions of removing over ninety-nine per cent of all the bacteria in the applied water, and a larger percentage of germs of intestinal origin. The rate of filtration can vary, of course, with the degree of pollution of the raw water. In Germany the official rate recognized by the imperial board of health is about 2.4 million gallons per acre daily. Results at Lawrence have shown that under very careful supervision the polluted water of the Merrimac river can be filtered at rates as high as four or five million gallons per acre daily with entirely satisfactory results. The city filter in that place, however, is not operated at a rate greater than two million gallons per acre daily, and this low rate has, with the management at times given to this filter, been much safer for the water consumers than a higher rate would have been. It is generally considered at the present time that a rate of three, or at the most 3.5, million gallons per acre daily is about the limit of safety in plain sand filtration where the object is the removal of disease germs from badly polluted water. With waters with a lesser degree of pollution higher rates are allowable. When a sand filter is first put into operation the water comes through almost un-

Digitized by Google

changed, and before good filtration or good bacterial efficiency can be obtained, the sand grains of the filter, especially those near the surface, must become covered with organic matter removed from the water, and this organic matter be filled with the bacterial life which entangles and destroys the ordinary water bacteria and disease germs that come to the filter in the raw water. Several weeks are generally necessary for this process of biological construction to occur with the ordinary New England waters, river or pond, containing the amount of organic matter that these waters do. With a clear water, however, a much longer period is necessary and finer sand should be used in the construction of a filter. Besides removing these germs of disease, however, the filter does to a considerable extent what the first filter was constructed for, that is, it improves the appearance of the water. Two of the largest experimental filters operated at the Lawrence station for a period of about ten years and at rates of filtration averaging from two and one half to three million gallons per acre daily removed about thirty-two per cent of the color of the applied water, practically all the organic matter in suspension in this water and forty per cent of the total organic matter besides removing from the raw water much of the odor and taste. The same thing can be said of the larger filters in operation in different parts of the world. Almost invariably a water is, as would be imagined, improved in appearance and its organic constituents very largely decreased.

It is the almost invariable rule to construct sand filters with depths of sand between three and one half and five feet. Many experiments and investigations have shown that while a shallower depth will under careful management and fairly low rates give good bacterial efficiency, yet at times when the loss of head is greatest in the filter, that is, when the filter's surface has become badly clogged with organic matter after a considerable period of use, better efficiency is given by the full depth of sand than by a shallower. Disturbances of the filter caused by changes of rate, breaking of the surface scum of organic matter, ice formation in winter, etc., have less effect upon the deeper than upon the shallower filter. The deeper filter is also more economically operated, that is to say, much more water can be filtered between surface scrapings than is the case with the shallower filter.

In order that good bacterial efficiency shall be assured in sand filtration a plentiful supply of oxygen is needed in the water, this oxygen being necessary to oxidize the organic matter in the water undergoing filtration and to assure proper bacterial life within the filter. Most waters contain enough dissolved air, but badly polluted waters may use oxygen so rapidly during filtration that it is necessary to introduce air directly into the filter sand. This can be easily accomplished by allowing the water to drain below the surface of the filter and filling in this way the pores of the sand with air. Such methods of operation disturb the sand more or less, and it is difficult to obtain quite as good bacterial efficiency as in continuous filtration. Aeration of the water before filtration can also be employed.

After a period of operation more or less prolonged the surface of a sand

Digitized by Google

filter becomes covered with organic matter and this matter prevents the passage of water through the sand. When this occurs the water is drained below the surface of the sand and this organic matter scraped from the filter. Although mechanical scrapers have been tried in many places, the most satisfactory method of scraping is on the whole a force of men with steel tipped wooden snow shovels. Experienced men working in this way take off a more even layer of sand than mechanical contrivances have yet been able to accomplish,—generally about one-fourth to one-half inch. This sand has generally been wheeled from the beds in barrows to the washing machine. At Lawrence and other places, however, it is now being carried away in pipes by means of a water jet or stream. The length of time between scraping varies with the organic pollution of the water being filtered, the construction of the filter and the rate of filtration. A filter receiving the polluted Merrimac river water at Lawrence at rates of from three to five million gallons per acre daily needs scraping from twelve to twenty times per year.

It is cheaper at most places to wash the dirty sand removed from the surface than to obtain fresh clean sand, and this washing is accomplished by means of various kinds of washing machines.

While sand filtration is very successful with the fairly clear waters of the eastern states of America and with some degree of sedimentation with the waters fairly free from turbidity of Great Britain and Germany, they are not apparently successful in the practical purification of the turbid river waters of our western and central states. In these states, having a very different geological formation from our own, so much fine clay or silt is carried in the water during periods of freshet and, in fact, during a considerable portion of the year, that plain sand filtration without preliminary treatment of the water does not clarify the water to a suitable or satisfactory extent. Long continued experiments made at Louisville, Cincinnati and Pittsburg have shown this fact. At Louisville and Cincinnati what might be called "modified forms" of the sand filter are being adopted; that is to say, the water is allowed to pass through settling basins in order that as much as possible of the silt and mud in suspension may settle out, and it is also treated with chemicals such as sulphate of alumina or iron before entering the settling basins or before going to the filter or at both places to cause a coagulation and precipitation of this organic matter in the sedimentation basins or upon the surfaces of the filters. By this means much of the work of clarification and improvement is removed from the filter. At Pittsburg, where certain experiments were carried on, it was decided that on the whole sand filters would more efficiently and more cheaply care for the water than these "modified forms," and large sand filters are now being constructed there.

You know that the simplest of the old form mechanical filters was simply a wooden tub with a couple of feet of sand in its bottom above underdrains; the water was passed through at rates of 100,000,000 to 200,000,000 gallons per acre daily and as this quickly clogged the sand washing devices were attached to the filters; these could be put into operation, streams of water

Digitized by Google

passed through the sand, the dirt washed from the surface of the filter and this with the wash water allowed to run to waste over the top of this tub or through channels especially provided for that purpose. In the newer forms of mechanical filters, or modified forms as I have called them, such as are being constructed at Louisville and have already been constructed at Little Falls, N. J., while chemicals and washing devices are used, the area of the bed is much greater than the tub form would allow and these beds are built in concrete basins similar to the ordinary sand filter.

The Lawrence city filter—the result of the work of the state board of health at Lawrence—was the first large filter built in this country. This filter is two and one half acres in area, is located on the banks of the Merrimac river at Lawrence, and to it this Merrimac river water is applied. The Merrimac river flows down through New Hampshire, being formed by the junction of the Winnipiseogee and Pemigewasset rivers. Before reaching Lawrence it receives the unpurified sewage of many of the mill towns of New Hampshire and the cities of Concord, Manchester, Lowell, Fitchburg, Clinton and other places.

The city of Lowell with 100,000 inhabitants is located about nine miles up the river from the intake of the Lawrence water works and all the sewage of this city passes into the Merrimac. The Lawrence water works were built in 1875. Soon after the introduction of a public water supply the number of deaths from typhoid fever in Lawrence began to increase. Finally it was recognized, along in the last of the '80's, that whenever there was an epidemic of typhoid fever in Lowell, which occurred practically every year, there was also an epidemic of typhoid fever in Lawrence. Investigations that were made showed that infection from Lowell reached Lawrence and was distributed throughout the Lawrence water supply system, and the state board of health finally persuaded Lawrence to build a filter which was first put into operation in 1893. From the beginning of operation the filter removed from the river water over ninety-eight per cent of all the bacteria, and its efficiency increased slightly after a number of years of operation until at the present time it removes over ninety-nine per cent of these bacteria.

I have a table prepared showing the growth of the city of Lawrence in population, the total number of deaths in the city year by year and the total number of deaths from typhoid fever before and after the construction of this filter.* You will notice from this table that the greatest number of deaths from typhoid fever in the city, namely 56 deaths, occurred in 1899 when the population of the city was a little less than 44,000; that in 1892, the year before the construction of the filter, the total number of deaths was 1,211 and the number of these due to typhoid fever was 45. The city in that year had a population of a little less than 48,000. In 1894, the first year that filtered water was supplied to the city, although the population of the city had increased, the total number of deaths had decreased more than 300

* See table beyond.

Digitized by Google

and the number of deaths from typhoid to 24. In 1904, when the population of the city had increased to 71,000 or nearly 50 per cent more than at the time of construction of the filter, the total number of deaths in the city was but 1,140, less by 71 than the total number in 1892, twelve years before,—in spite of this rapid growth of population,—and the total number of deaths from typhoid fever was 10 as against 45 in 1892. If the total death rate had increased with the population, the total number of deaths in 1904 would have been in the vicinity of 1,600 and the total number of deaths from typhoid fever about 70. This showing, however, is not as good as it might be owing to one factor that comes between the city and an absolutely safe water supply. Lawrence is a large manufacturing city and the banks of the Merrimac river are lined with large mills. The unpurified canal water or river water is piped into these mills for manufacturing purposes, and many of the operatives drink this water, and a large percentage of the deaths from typhoid fever in the city are of mill operatives who expose themselves in this way. Of the 22 deaths in 1903 about 80 per cent were of this character, and a very large proportion of these were operatives from one mill. An investigation of this mill showed that a pipe entering the mill which was, supposed to be carrying city water to the mill people, was, owing to a defect in a gate, really at times supplying unpurified river water.

The figures given in the table show that besides decreasing typhoid fever in the city, pure water decreases death from other causes. The average death rate of Lawrence for the four years preceding the construction of the filter was 25.50 per 1,000, for the four years following the construction of the filter 18.70 per 1,000 and for the past five years 17.50 per 1,000. This great decrease cannot of course be entirely ascribed to the introduction of filtered water in 1893, but it has certainly been the chief fact in producing this result.

I must refer briefly to the Albany filters. At Albany the largest sand filter in operation in America was built about seven years ago to filter Hudson river water which before that date was supplied in an unpurified condition to the city. This river water has, at Albany, a pollution about equal to that of the Merrimac at Lawrence, and the population on its watershed above Albany is about 550,000. The Albany filters are of masonry construction, covered and divided into beds of an area of 0.7 of an acre each. The average volume of water filtered is 15,000,000 gallons per day and the water first passes through a sedimentation basin holding a day's supply. The filters contain approximately four feet in depth of sand of an effective of 0.31 millimeter to 0.36 millimeter. The bacterial efficiency of the filters has always been about 99 per cent and the rate of filtration is about three million gallons per acre daily.

The Hudson river water applied to these filters differs very materially from the Merrimac river water. It contains at times enormously greater numbers of bacteria, and also at times greater amounts of organic matter. This is due apparently not so much to sewage pollution, although the sewage of 100,000 people passes into the river some five or six miles above the

Digitized by Google

intake of the filter, as to the nature of the watershed and the turbidity of the river water. The bacteria present in the water are in the winter or at times of flood often above 100,000 per cubic centimeter for days at a time, and only occasionally below 50,000 per cubic centimeter. Judging, however, from the B. coli determinations made at Albany, this germ is not more than half as abundant as in the Merrimac river water at Lawrence. During the periods of high numbers of bacteria in the Hudson river water, while the bacterial efficiency of the Albany filters is, when reckoned upon the percentage basis and including the results from all the filters, very good and seldom falls below 99 per cent, yet for days at a time the effluents of some of these filters contain several thousand bacteria per cubic centimeter, and the average effluent has at times very high bacterial contents.

The reduction in deaths from typhoid fever at Albany has been from an average of 84 per year for the ten years preceding the building of the filter and a total of 106 during the preceding year, to 35, 27 and 19 during 1900, 1901 and 1902 respectively. Albany is a city of about 100,000 people, hence the death rate from typhoid fever during 1902 was about 1.9 per 10,000, while in Lawrence it was 1.7 per 10,000. It would seem, therefore, that, while the Albany filters allow at times a large number of bacteria to pass through them, yet they have been very effective in removing disease germs.

I had intended to give figures showing the efficiency of filtration in various other cities, but these figures I find are largely given in the last bulletin of your State Board of Health. London, Berlin, Hamburg, Albany, Philadelphia, and other cities all show a reduction in the typhoid death rate of from 73 to 90 per cent by the use of filtered water, and as we advance in this line of sanitary science we certainly shall not be satisfied simply to filter the grossly polluted waters but practically all surface waters that are open to accidental infection. New Haven, Conn., thought it had a safe water supply until one case of typhoid fever in a farmhouse on its watershed caused 450 cases in the city within one month, and many other such instances could be cited. New Haven has since constructed sand filters. The cost of filtration is not excessive. The Lawrence filter cost $65,000, or about $26,000 per acre. It is not a masonry structure and is without a roof, hence this low cost. The Albany filters cost for the entire plant, land, pumping station, sedimentation basin, clear water reservoir, etc., $496,000, and for filters and sedimentation basin alone $323,000 or a little less than $60,000 per acre. At Little Falls, N. J., modified sand filters have been recently constructed, that is, filters used in connection with coagulation basin, etc., at a cost of $15,000 per million gallons of daily filtering capacity. The actual cost of filtration per million gallons of water filtered varies greatly at different places, but is generally from two to three dollars per million gallons. Interest charges, etc., double this, but it is certainly an efficient method of saving human life, and no city can afford to supply its inhabitants with polluted water.

Digitized by Google

VITAL STATISTICS—LAWRENCE, MASS., 1880 TO 1904, INCLUSIVE.

	Population.	Total Deaths.	Deaths from Typhoid Fever.
1880	28,000	878	27
1881	28,600	846	49
1882	29,300	911	32
1883	29,900	916	28
1884	40,500	944	18
1885	41,300	896	18
1886	41,800	802	23
1887	42,500	974	47
1888	43,100	....	48
1889	43,800	1122	56
1890	44,700	1191	55
1891	46,200	1136	53
1892	47,700	1211	45
1893	49,300	1171	33
1894	50,700	901	24
1895	52,200	998	14
1896	54,300	1017	8
1897	56,400	1067	9
1898	58,500	1057	11
1899	60,500	1284	20
1900	62,600	1250	11
1901	64,700	1118	12
1902	66,800	1163	11
1903	68,900	1178	23
1904	71,000	1140	10

DEATHS FROM TYPHOID FEVER IN LAWRENCE, 1885–1904.

Years.	Total Number of Deaths.	Deaths per 10,000 of Population.
1885	17	4.20
1886	23	5.75
1887	47	11.75
1888	48	12.00
1889	55	13.75
1890	60	13.33
1891	55	12.20
1892	50	11.11
1893	39	8.66
1894	24	5.00
1895	16	3.07
1896	10	1.86
1897	9	1.62
1898	11	1.88
1899	20	3.31
1900	11	1.76
1901	13	1.85
1902	11	1.65
1903	23	3.19
1904	10	1.41

Digitized by Google

Dr. H. A. Elliot, Barnet.

This matter of filtration of water, gentlemen, is a thing that has never engaged my attention in the least; having been living in a town which has, I believe the best record for pure water, according to analysis, so that I never have looked up the matter very much, but I am convinced from the very able papers this afternoon, that we have polluted water, and I am sure we have had some experience in a neighboring town. When a member of my family goes to that town, he takes a vial of pure water, and by wrapping paper around it, he can carry it along, and take a swig from that when he is thirsty, and people would think it was coffee. I refer to St. Johnsbury.

We have polluted water supplies, and I gather from what the able men have said this afternoon, that filtration is a practical method of purifying such water. I heartily agree with Professor Votey that in case this method is installed, it must be looked after scientifically, otherwise it becomes worse than useless. I am sure in some places in Vermont, good water can be obtained without using filtered water. I hope in most cases it can be done. Perhaps in the larger cities this would not be possible.

Dr. Caverly.

The secretary has just received a paper from Dr. Doty of New York on this important and recent work in connection with the purification of water by the use of copper, and we will ask him to read it.

Dr. Holton.

The state board of Massachusetts have been experimenting with this matter of using copper to purify water, and what would be the effect upon the water afterward, and they are now preparing a statement in regard to the experiments. This board knew that Dr. Doty had given considerable time and attention to this and installed systems and made experiments in reference to it, and on seeing him two months ago, he said he would come and try and discuss this subject unless something prevented. I received a telegram from him that a ship had just come in from South America, and with it a case of yellow fever, and he didn't dare to leave the city, as he feared there might be more, but would send his paper on the subject.

Digitized by Google

THE USE OF COPPER IN THE PURIFICATION OF WATER.

By Alvah H. Doty, M. D., Quarantine, Staten Island, N. Y.

The purification of water supplies is an exceedingly important and frequently a very difficult problem for consideration on the part of public health officers. Practically it relates first, to the removal of the offensive odor and taste which frequently occur in reservoir water, and which is as a rule due to the presence of a vegetable growth known as algæ. This is usually described as having a fishy odor and smell and often erroneously attributed to the presence of dead fish. The most expensive and drastic means are often taken to remove this unpleasant condition even to the extent of rebuilding old reservoirs or constructing new ones.

Second, the purification of drinking water relates to the destruction of pathogenic organisms which are presumed to be present in reservoirs.

The investigation of Dr. George T. Moore, of the United States department of agriculture, has shown that minute doses of sulphate of copper if properly distributed in the water will destroy the algæ, clarify the water and remove the offensive taste and odor caused by the presence of this growth. Those who have not had actual experience in this direction will hardly appreciate the great value as well as the simplicity of this method, which constitutes an exceedingly important and practical contribution to the subject of water purification. Dr. Moore's conclusions are that copper even in very minute doses has a toxic effect on the algal growth and precipitates it. He recommends for this purpose sulphate of copper in the strength of from one to one million or even in smaller proportions. When employed for this purpose the copper should be placed in a bag made of some coarse and rather loose texture such as coffee sacking, etc., and attached to a cord which is fastened to the stern of a small boat, or held in the hand of the operator, while the boat is slowly propelled about the reservoir until the copper is entirely dissolved. It is essential that the bag be held not too far below the surface of the water and the copper so far as possible be evenly distributed. Inasmuch as the algal growth includes small sac containing an offensive oil, and as the copper tends to rupture these sacs, the offensive odor and taste of the water is at first increased, but exceedingly satisfactory results are quite sure to follow in three or four days.

In connection with this subject it is necessary to consider how far or to what extent sulphate of copper can be employed in the manner above described without injury to those using the water. If it is on the basis of one to one million parts of water, it would amount to about one pound of sulphate of copper, apothecaries weight (i. e. twelve ounces of 480 grains each) for every 100,000 gallons of water in the reservoir. I am satisfied that this proportion in drinking water need receive no serious consideration inasmuch as the use of one pound of copper to 100,000 gallons of water con-

Digitized by Google

stitutes only about one grain of copper to every sixteen gallons of water, and as a person does not ordinarily drink more than a gallon of water in twenty-four hours, there would be only one-sixteenth of a grain taken during that period. This amount would only be present provided the copper remained in solution in the water. As a matter of fact it does not, as immediately after the introduction of the copper it forms a mechanical and chemical combination with organic and other matter in the water and is precipitated. In my own experiments with copper, I have found that where much larger amounts were used (five to twelve grains for each gallon of water experimented with) no trace of it could be found in the water at the end of twenty-four hours after a careful chemical examination. Therefore, I believe that copper in minute doses, as Dr. Moore suggests, for the removal of the offensive odor and taste in reservoir water, usually due to the presence of algæ is absolutely harmless and is followed by the most satisfactory results.

I do not believe however that sulphate of copper can safely be depended upon for the disinfection of reservoir water presumed to contain pathogenic organisms particularly the typhoid bacilli. As a matter of fact there are but few instances recorded where typhoid bacilli have been detected in drinking water. An abrupt and general outbreak of this disease in a community and in the absence of some known cause for it, justifies us in suspecting that the water supply if a common one is responsible for the outbreak, although the organism cannot be found in the water. Unfortunately laboratory experiments cannot accurately determine the value of sulphate of copper in the disinfection of reservoir water inasmuch as in the latter we are dealing with factors which are not present in experimental work; for instance, the uncertainty as to the exact character of the media which presumably contains the organism. Reservoirs are constantly receiving water which is not always of a certain standard and there is a constant variation in the amount of organic and other matter. This alone would tend to show that the value of copper in the disinfection of reservoir water in the manner already referred to is at least questionable as we are dealing with copper in exceedingly minute doses, which probably is promptly neutralized and rendered useless by the different constituents of the water. As the result of my own experiments made with typhoid bacilli in distilled water, tap water, sewer water and broth, it was very soon apparent that the germicidal value of sulphate of copper diminished as the organic matter increased.

The danger of employing sulphate of copper for the disinfection of reservoir water in the presence of typhoid fever, lies in the fact that it would probably be depended upon to destroy all organisms present; possibly nothing further would be done. Whereas, our first duty should be to discover the origin of infection. We know this is probably not in the reservoir, but in one of its tributaries. The most exhaustive inspection is often necessary to determine the origin which is frequently due to the presence of mild, ambulant or unrecognized cases, which have escaped detection or have been mistaken for some other disease. Until we have discovered this or

Digitized by Google

have made every effort to do so, we have not as health officials fulfilled our duty to the public. After the origin of infection has been discovered and isolation, quarantine, disinfection, etc., have been carried out the treatment of the reservoir water should be given proper attention; at this time the use of sulphate of copper may be considered. However, I am certain that it cannot be depended upon to destroy the pathogenic organisms presumed to be present in reservoir water and to prevent the transmission of infectious disease. I believe that other means to obtain this result are imperative.

My experiments with sulphate of copper, alone, and in combination with lime, have produced some very interesting results particularly as to the value of these agents as a deodorant. The experiments referred to, which were published in the New York Medical Record, January 21, 1905, showed that although copper and lime used alone were efficient deodorants, the results were far more pronounced when used in combination in the proportion of one pound of sulphate of copper (blue vitrol) and one pound of calcium oxide, commonly known as "rock or unslaked lime," to ten gallons of water. The results obtained by the use of this mixture in deodorizing decomposed organic matter, offensive vaults, cess-pools, garbage heaps, etc., showed it to be the most valuable and practical deodorant which we possess for these purposes. One gallon of this mixture was sufficient to deodorize at least twenty-five or thirty gallons of offensive fluid. Its action is rapid and permanent, it is practically harmless, cheap and easily made. In preparing the mixture, it is advisable to first dissolve the copper by placing it in a bag made of some coarse material and suspend it just below the surface of the water; in this way it is dissolved much more rapidly than when the copper is thrown to the bottom of the receptacle and stirred. Six or eight gallons of water may be used to dissolve the copper leaving the remainder of the ten gallons of water to prepare the lime, which is done by placing the latter dry, in a pail, or other receptacle and gradually adding water and stirring until the "steaming," or "slaking" is completed. The copper and lime may then be mixed together; a precipitate takes place, and therefore stirring is always necessary before using the stock solution. In a well covered receptacle this may be kept indefinitely.

Dr. Holton.

You will find an article on this subject in the Medical Record of January 21, last.

This seems to me a matter of great importance. I had a long talk a few weeks ago with Dr. Moore, and he cited many instances where this method of purification has been used within the last two years, with no unpleasant effect. He said that he was not prepared to say that it would destroy pathogenic organisms.

The proportion used is, one pound of blue vitrol to about ten million gallons of water. I think Dr. Stone, the director of the Laboratory has made some original experiments very much in line with those experiments of Dr. Doty's, and I think he would allow us to call on him.

Digitized by Google

Dr. B. H. Stone.

Being asked to give the results of some experimental work which we have been doing recently at the Laboratory, I would say the work was undertaken only a short time ago and has not yet received all the verification which it needs before I should wish to give it any publicity, and I give it here with a great deal of reluctance. Kindly take what I tell you as suggestive, rather than conclusive.

In a recent number of several medical and scientific journals has appeared an article by Dr. George Kraemer of Philadelphia, describing the results of some experiments which he conducted to show the action of metallic copper on typhoid bacteria in water. His work seems to show that metallic copper has a strong germicidal action on typhoid bacteria under these conditions.

His method was to suspend a piece of copper foil in the water, using a piece about three and one half inches square to each quart of water. Typhoid polluted water treated in this way he discovered was rendered free from the infecting organism in from four to six hours.

These results seemed so remarkable that it seemed worth while to try to confirm them. With this end in view and also to decide, if possible, whether or no this germicidal action was limited to copper or was common to other metals, we had made beakers of glass, copper, zinc, tin, lead, aluminum and platinum. We found that water containing typhoid germs alone was rendered sterile by keeping it a short time in the copper beaker. About twelve hours of such exposure usually proved sufficient. We further noted that the results with zinc and tin were just as good, while the other metals had little effect on the growth of the bacteria. Later we decided that the action of the tin was really the action of the iron oxide, as the tin plating was imperfect, and rusting took place. The result with copper and zinc were repeated and confirmed time and time again, so that it is safe to say that these metals certainly do in some way prove fatal to the typhoid bacilli. This action of zinc is operative in galvanized iron pipes, as was proved by conducting the experiment with pieces of one half, three fourths and one inch galvanized iron pipes, in place of the beakers.

The thought is suggested that in many cases possibly we may be unconsciously treating our drinking water to a fairly effective method of purification. The service pipes in most houses are galvanized and the water that is drawn is ordinarily water which has stood in contact with the galvanized interior of the pipe some time. This may account for the fact often observed that notable polluted supplies do not always produce as much disease as would be expected.

Whether this germicidal action takes place by a solution of the metal or not I am not prepared to state, though it seems highly probable that such is the case with zinc, as the metal does go into solution as an oxide in considerable quantities. The solvent action is not so clear in the case of copper. We have been unable to detect anything but the faintest traces of the metal in the water, and furthermore the beaker apparently loses no weight.

Digitized by Google

If the action does occur by means of the metal in solution, the question of course arises, Are we not leaping out of the frying-pan into the fire by any such method; substituting a mineral poison for an infective poison.

We are much inclined to think that this germicidal action is in no way to be relied upon as a practical method of purifying drinking water. It can certainly never take the place of the approved methods of filtration, but may possibly be of some value, as Krarmer suggests, in emergencies.

The Massachusetts State Board of Health has, I think, conducted some experiments on the action of water upon the metals, and Mr. Clark can no doubt explain the bactericidal action of copper and zinc.

H. W. Clark.

I should like to make just a few remarks about this copper sulphate question. Down in Massachusetts we have been trying that method for about a year and a half, and we have found, just as Dr. Moore has found and Dr. Doty, that there are some organisms that it will not destroy; seems to have little or no effect upon the organisms in the reservoir. There are organisms in the reservoirs which color the water, and we simply made it a point to get these out, and improve the taste and color of the water, and in fact, a great many of our experiments along that line are rather disappointing.

In regard to killing bacteria by copper sulphate, we have made some experiments similar to those of Dr. Stone, and with our dishes of tin or iron, we have found results similar to Dr. Stone, or a little more favorable, and when we have killed the typhoid, we have found a large amount of zinc, tin or iron taken into the water. The iron and tin would not have much result, but with copper we have killed the bacteria; the water shows a large percentage of zinc. I think if Dr. Stone made examinations of the water he will find he got quite a large amount of metal in the solution. Any water will take a solution in a short time from a copper or tin dish.

We have also found, and we have done the work not only with laboratory cultures, but with bacteria and culture of coli, and laboratory bacteria, and killed it much more rapidly than we can if we take hearty tough old coli which has been living in all sorts of hard conditions of life, and will stand more than those laboratory cultures. So I think it would be the same whether with coli or other pathogenic bacteria.

In regard to Dr. Doty's paper. The statement that the copper can be placed in the reservoir, and in twenty-four hours he cannot find any of it. I am very much afraid Dr. Doty has not a good method. One pound of copper sulphate put into a million gallons, you will be able to find it not only in twenty-four hours afterward, but in twenty four days after; some of it will go down, and comes up again. You have to have a refined method of dealing with copper sulphate. One part copper sulphate to one million parts of water is the amount recommended. You can easily detect this amount of copper when used in this proportion. I think Dr. Doty and Dr. Moore would be able to find the copper in the water in twenty-four hours.

Digitized by Google

I think all those copper experiments are going to lead up to good results. Some of us are carried away with our own experiments at the present time, but I think they ought to investigate before they feel very sure.

Dr. Whitaker.

I am a good deal interested in this idea of using copper. We are troubled in certain seasons of the year with this peculiar fishy odor in the water. Our water is taken from a pond which is fed almost entirely by springs, and the water is very good, except that at certain times it has this odor, and we have been talking recently about trying copper to try and remove this fishy odor in that pond which is the source of our water supplies, and, if it were possible to do away with it for a time, how long a time would that last, and how much copper would be necessary to use. I would like to ask if there is any one present who has had experience?

Dr. Holton.

I think you have to tell first the number of gallons of water you have in your pond, and then you can put your copper in in proportion as has been stated—one part to a million of gallons.

Dr. Whitaker.

I should say the pond covered seventy-five or one hundred acres, and the question in my mind is how to get the odor out of that water and not do any harm to the water.

Dr. Holton.

I won't say anything about the principle of using the copper sulphate, but it is easy to get at the number of gallons by getting the average depth. Then Dr. Moore has given, I think in his latest bulletin, the amount of copper to be used. We are supposed to use, for instance, one pound, apothecaries' weight to one hundred thousand gallons.

Question.

How long would that purification last?

H. W. Clark.

I am not prepared to say. Some of the organisms, the anabaena, which is one of the largest organisms, and gives one of the worst and most fishy tastes and odors of any organism, that comes sometimes before the ice is gone, and sometimes a little later in the spring, and if you destroyed it, why probably it would reappear in a few weeks. It goes away in a little while anyway. Now I am not certain that in killing that organism that you would kill its enemies, but it will reappear in just as large numbers next year.

Mr. Ketchum, Vergennes.

I simply want to ask one question. I come from Vergennes. We have a

Digitized by Google

water supply which has given us a good deal of trouble, and I want some information. I understand the water there has been condemned, not on account of the odor, but on account of the disease germs which it contains. I also understand that these diseases are caused by sewerage which empties into that river by the town of Middlebury, situated farther up the stream. Don't the laws of the state of Vermont prohibit the sewage pollution of any stream, the waters of which are used for a water supply? I supposed if that law was transgressed by any one they would have to pay the penalty. We have had to pay the penalty to the amount of $50,000 or more. What rights have towns or persons acquired by using a natural water course into which they have discharged their sewerage for a number of years? Have they a vested right in this stream? We had our water supply from this stream long before they began to empty their sewage into it.

Dr. Holton.

Yes, but you did not object to it then.

I think, however, your question had better go into the question box.

Prof. J. W. Votey.

Gentlemen:—I do not know that I can add much of value to the admirable paper Mr. Clark has presented—he has covered the ground so thoroughly—unless to emphasize some of the points touched upon by him.

It seems at the present time as if every intelligent person must realize the need of having pure drinking water and understand the importance of filtration in that connection; but when you come to discuss the question of authorizing the installation of the appliances or works necessary for the purification of a public water supply, one is usually surprised at the large amount of opposition that develops, mainly through ignorance of the value of and necessity for the proposed improvement. Perhaps we see more of this opposition here in the east, where the people are accustomed to the clear, and presumably pure, water, such as New England furnishes, than in the west, where the muddy water from a river is often used, or in the south, where the peat swamps furnish a highly colored water, often used as a source of public supply. Many people are unable to understand, or cannot be convinced, that a water is polluted unless the impurities are visible. It is hard to convince the man who has always used the water from a certain well that the water is dangerous to drink on account of a nearby cesspool. Analyses showing the presence of disease germs in the water or the presence of disease itself in the family are often required as convincing arguments.

A very common situation, and one often difficult to handle, so far as establishing the need of the purification of the water supply is concerned, is that where a city takes its supply from a river which receives the sewage from other cities up the stream. Here often the only direct evidence of pollution in the water supply may be in the analyses or in the presence of an undue amount of intestinal diseases; the argument of a high deathrate

Digitized by Google

from such cause is wanting until possibly a typhoid epidemic breaks out in one of the cities up the stream. Unfortunately we do not need to go outside the boundaries of our own state to find several examples of this condition. It is surprising how long people will be content to use a water known to be polluted and take their chances of dodging disease germs.

When a city or village water supply becomes polluted and purification is necessary, at once the question comes up as to what is best to be done. It is customary at first for each householder to protect himself by inserting a domestic filter on his own supply, and here arises a special danger. Most of the small filters used are nothing more than strainers, and they do not furnish the purified water that the householder imagines he is securing. Again, all filters have to be provided with means for cleaning or removing the impurities collected in the filters, and the successful operation of the filters depends upon very frequent attention to the matter of cleaning. The average householder does not appreciate the need of this work, and such filters are often neglected until they become a source of pollution instead of a means of purification of the water. Public filtration is in general more successful and safer than private filtration.

No city need now hesitate to install a system of filtration for fear of failure of securing successful results, as the experimental stage in this line of work is past, except such as may be necessary to adapt general methods to local conditions. Experiments in this country and abroad have established beyond a doubt that approximately 99 per cent of the impurities in water can be removed by either slow filtration through sand, or rapid filtration with the use of a coagulant. It should be noted, however, that each city furnishes its own special problem in this matter, as the method of filtration to be adopted and the design of the necessary works depend upon the exact composition or character of the water to be filtered, the climatic conditions, the existing system of water works and local topography. In this state it is necessary to protect all filters from danger of freezing, which may add 50 per cent to the cost of the plant. The public filters most needed in this state are those of low cost, both for construction and operation, and requiring the least amount of attention for successful operation. A number of the villages needing public filters are of such small size that the water works need to be so far as possible self-operating or to require a minimum amount of labor. There have been installed in the past in these places a number of so-called filters, consisting practically of a box filled with sand, with little or no provision for cleaning, and naturally giving very unsatisfactory results. Such arrangements on public supplies should no longer be permitted.

The successful operation of a properly designed filter can only be conducted by frequent analyses of the purified water. Laboratories for this purpose are out of the question for most of the cities and villages in Vermont, and where filters are installed on a public supply it may be necessary for the state to furnish the analyses needed in the operation of the filters, or to put all such filters under the general care of the State Board of Health.

Digitized by Google

BULLETIN OF THE

VERMONT STATE BOARD OF HEALTH.

Volume VI. No. 1.

Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

All persons receiving outfits for samples of water to be examined at the Laboratory are most urgently requested to fill and return them promptly. Any delay in returning them prevents others from using them and delays the work of the Laboratory.

SCHOOL OF INSTRUCTION FOR HEALTH OFFICERS.

The Seventh Annual School for Health Officers was held, as indicated in our last Bulletin, in Burlington, opening June 19. It was considered by those who have attended previous Schools to be the best of all in point of interest and information imparted. Two thirds of the health officers of the state were present. Those towns, whose health officer did not attend, thus failing to perform his duty to his town to gather for himself the knowledge which the state provided for him and which is so much needed to enable him to perform the official duties which devolve upon him, we leave for the

Digitized by Google

present, to judgment of the public. The following is the list of those towns not represented in the attendance upon the School.

Addison County.—Bridport, Bristol, Ferrisburg, Goshen, Granville, Hancock, *Leicester, Whitney.

Bennington County.—*Manchester, Peru, Pownal, Sandgate, Searsburg, Shaftsbury, Woodford.

Caledonia County.—Kirby, Ryegate, Sheffield, Waterford, Wheelock.

Chittenden County.—Huntington.

Essex County.—*Bloomfield, Brunswick, Canaan, East Haven, Guildhall, Lemington, Maidstone, Norton, Victory.

Franklin County.—Fairfield, Richford.

Grand Isle County.—Every town represented.

Lamoille County.—Cambridge, Elmore, Johnson, Wolcott.

Orange County.—Newbury, West Fairlee, *Washington.

Orleans County.—Albany, Barton, Brownington, Craftsbury, Glover, Jay. Lowell, Troy, Westmore.

Rutland County.—Chittenden, Clarendon, Danby, Mendon, Pittsfield, Pittsford, *Poultney, West Rutland.

Washington County.—Duxbury, East Montpelier, Moretown, Woodbury.

Windham County.—Athens, Brookline, Dover, Dummerston, Grafton, Halifax, Marlboro, Newfane, Westminster, *Whitingham, Wilmington, Windham.

Windsor County.—Andover, Baltimore, Hartford, Plymouth, Pomfret, Sharon, Windsor.

*Unable to attend on account of sickness or disability.

Phil B. Hadley of Brown University, reviewing the subject of evolution, draws the following conclusions:—

1. That the advocates of evolution cannot prove that life germs arose by natural processes.

2. That evolutionists show an utter inability to prove that there exists a universal law of development and improvement.

3. That they cannot prove lower species of plants can be transmuted into higher.

4. That in all excavations not a single connecting link between species has been discovered.

5. That physical and mental science proves it to be impossible for an animal to come into possession of a human soul, human mind, or human body.

6. That geologists have silenced the voices of the advocates of the animal descent of man.

Digitized by Google

7. That all scholarly men and scientists are not evolutionists.
8. That many who once upheld evolution are now abandoning it.

There need not be a moment's hesitation in saying that the hypothesis of evolution, with all the other speculations attached to it, has collapsed beyond the hope of restoration.

TYPHOID FEVER.

The importance of every local health officer looking after the water used for domestic purposes in his town is a duty that cannot be too carefully performed.

It is a well recognized fact that the typhoid fever germ is a water-born germ and that the outbreaks of this disease are most often traced to the water supply.

The whole number of cases reported for 1904 was 461. (Were all cases reported?) Number of deaths from this preventable disease, 107. The prevention of this disease must rest with the local health officer. Every case should be reported and an effort made to determine the source of infection. The expense attending these cases is appalling. The following is a low estimate. For each case: Doctor's bill, with medicine, $50; nurse, four weeks at $15 per week, $60; wages, 35 days at $1.50 per day, $52.50, making the cost of each case $162.50.

Cost of 461 cases	$74,912 50
Funeral expenses, $50 each, 107 deaths	5,350 00
Total	$80,262 50

NUMBER OF CASES

Addison County	47
Bennington County	42
Caledonian County	48
Chittenden County	24
Essex County	21
Franklin County	84
Grand Isle County	8
Lamoille County	1
Orange County	4
Orleans County	86
Rutland County	35
Washington County	10
Windham County	24
Windsor County	27
Total	461

Digitized by Google

NUMBER OF DEATHS.

Addison County	9
Bennington County	8
Caledonia County	10
Chittenden County	12
Essex County	4
Franklin County	19
Grand Isle County	1
Lamoille County	0
Orange County	1
Orleans County	17
Rutland County	10
Washington County	6
Windham County	6
Windsor County	4
Total	107

The contract has been awarded for a new bacteriological building at the University of Minnesota. It will be built at once and will cost $100,000.

Dr. George T. Moore, physiologist, in charge of the laboratory of plant physiology of the Department of Agriculture, has resigned.

State Sanatorium Appropriation. The Rhode Island lower house has passed the bill establishing a State Sanatorium for Tuberculosis, appropriating $48,000.

Digitized by Google

614.0979
V26

Bulletin No. 2, Volume VI.

Issued Quarterly by

Vermont State Board of Health,

December 1, 1905.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS:

The Prevention of Infection in the Family and Disinfection in Tuberculosis, by Edward R. Baldwin, M. D., Saranac Lake, N. Y.
Adirondack Sanatoria for Tuberculosis.—Some Suggestions for Vermont, by Redfield Proctor, Jr.
The Duty of the Local Board of Health in the Campaign Against Tuberculosis, by Alexander M. Wilson.
Is Medication of Service in the Treatment of Tuberculosis? by Dr. C. W. Peck.
Address on Tuberculosis, by Hon. Henry Ballard, Burlington.
The Tuberculosis Problem, by W. N. Bryant, M. D.
The Sanitarium, by D. D. Grout, M. D.
Vermont Society of Tuberculosis.
Quarantine, by B. H. Stone, M. D.
Examination of Miscellaneous Articles Since Last Report.
News Items.

BRATTLEBORO, VT.
1905

Digitized by Google

Digitized by Google

THE PREVENTION OF INFECTION IN THE FAMILY AND DISINFECTION IN TUBERCULOSIS.

EDWARD R. BALDWIN, M. D., SARANAC LAKE, N. Y.

Your president has kindly honored me with an invitation to address you on tuberculosis as related to the health officers' position, and the methods of prevention which may be deemed practical and important in the average family. I must speak chiefly from the standpoint of experience in a health resort, where I have served on the board of health and have had close contact with tuberculous individuals, but the conditions cannot be fairly paralleled in an average town where the patient is surrounded by his own family and usually nursed by them.

The most convincing of all dogmas based on external evidence has been that of the inheritance of tuberculosis. It was and is yet a distinct strain upon credulity to lay the burden of family tuberculosis upon the theory of infection. Even now the existence of any specific predisposition is questioned in some quarters and great stress is put upon infection during earliest infancy. However this may be we have some basic truths which give us a clear guide to methods of prevention. The first is that tuberculosis is always produced by a bacillus and that the human sputum is the most frequent source of the infection. Secondly, it is for the most part a house-disease, requiring prolonged and repeated exposure or close contact with the patient under especially predisposing conditions, for its successful implantation or development. Hence, we cannot fairly speak of contagion in connection with tuberculosis in the ordinary meaning of the term, else we must recognize a large degree of immunity to it as a normal condition of the human race.

Since, then, it is the inherited or acquired suceptibility that is needed to make the infection potent for harm, we should rightly ask, is it not of equal or greater importance to attack the problem of prevention from an entirely different standpoint than the baccillus? Indeed, we may as well give up the fight at the outset, unless we can have improved social conditions going hand in hand with strictly sanitary measures. It should be freely acknowledged that the present day diminution of tuberculosis has thus far been accomplished quite as much, if not more, by better food, housing, improved working conditions, the temperance movement, and all other physical and moral influences that distinguish our century. We must remember, however, that the removal of poverty, depravity, and ignorance is a slow process, whereas it is quite conceivable that some simple sanitary measures directed to the removal of the infective agent might produce a very great diminution in the disease. This we believe to be true of tuberculosis and it is a matter to which health officials can profitably give their attention. As has already been said, the sputum is the chief source of human tuberculosis, although we must not permit the impression to spread that no other source

Digitized by Google

need be considered. However few cases of tuberculosis are derived from infected milk, it is a convincing argument for the complete extermination of bovine tuberculosis, which will undoubtedly be accomplished in time by the aid of the tuberculin test.

When we come to apply the logic of our knowledge to the protection of the family where one of its members is afflicted with pulmonary tuberculosis we find one of the most difficult, and, at the same time, one of the most delicate problems which confront the health authorities, and much more, the attending physician. While theoretically it is possible to prevent the dissemination of the bacilli in the home it is practically impossible in nearly every case; but I believe that the most cleanly and intelligent people can so protect themselves that the small amount of inevitable infection can do no harm under ordinary circumstances of health.

We are not able to state how long an exposure or how much infection is necessary in individual cases to become dangerous to that individual. Everything points to the fact that large numbers of tubercle bacilli are inhaled or swallowed by persons in normal health with impunity. On the other hand a combination of unfavorable conditions, either of health, environment, or habits, may make a very small number of virulent tubercle bacilli potent to do harm.

We naturally inquire when can a tuberculous patient first become a danger to his family, and the answer is from the time that he begins to expectorate tubercle bacilli; and the danger may undoubtedly be greater in some instances during the stage when the patient is yet able to move about in his home and has a strong expulsive cough than when he is bedridden and too weak to make violent efforts in expelling the sputum.

I should say that there are two stages in progressive tuberculosis when the patient may be regarded as more dangerous than at any other time. The first is, as already stated, when he begins to expectorate bacilli and when the diagnosis is yet unknown or denied by the patient or even—sad to say—by his physician. The second is during the last stage when he is too ill to observe care with his expectoration, which prior to this stage he may have been not only willing but anxious to do.

From the ignorant and vicious there seems to be little chance for protection short of forcible detention in an institution. With the more intelligent and naturally cleanly it is always possible to obtain coöperation and it is only necessary to show them where the danger lies, when they will gradually learn to use cuspidors and avoid promiscuous spitting. It requires undoubtedly a high grade of intelligence and conscience to be constantly on the guard when coughing, and to cover the mouth so as to avoid expelling small particles of sputum which undoubtedly constitute the danger in living rooms. In the majority of patients among the poor we may only hope by furnishing spit-cups and simple instructions to avoid the grosser danger from the sputum. It is conceivable that each state or township shall eventually provide freely, quantities of cheap paper cuspidors for the pocket and the room, which shall be burned daily. Quite as important to

Digitized by Google

my mind is the necessity for some substitute for the handkerchief. Women, as a rule, expectorate into handkerchiefs, and it cannot be denied that the children in the family of a tuberculous mother very frequently obtain their infection through this medium either directly or indirectly. The use of cheap gauze, or other cotton cloth, and Japanese paper, which can be frequently burned, lessens the danger immensely. When we reflect that the average handkerchief passes from the mouth of the mother to that of the child not infrequently, and is generally given an opportunity to become dry before it is washed, one does not fail to see that the handkerchief is often destined to be a fatal weapon when used by a diseased person.

It will be a great step forward when health boards shall furnish physicians, or directly to the patient, free of charge, suitable cuspidors from time to time, and by actual inspection see that they are being utilized properly. Numerous devices have been originated of late years for the reception of the sputum. From my own experience I am opposed to any form of cuspidor which requires cleaning, except when a conscientious and intelligent person presides over the cleaning process. This service is rarely obtained even in institutions, therefore some of the paper cuspidors are to be recommended. A liberal expenditure in this direction and a sustained effort to have them used ought to pay well in lives for the community.

Next in importance for the protection of the family is what I choose to call the toilet of the sick room. You all know the stereotyped requirements for tuberculosis; namely, a large well-sunned and aired room with the least possible furnishing, preferably without a carpet so that moist cleaning is feasible. These conditions are rarely obtained among the poor, where the greatest danger exists, and it is obvious from all that has been said that the logical thing to do is to remove the patient to a sanatorium or hospital according to the stage and condition of the disease. But, as we must deal with these patients at home we can try for the best obtainable conditions. The most important of all is to isolate the patient in a separate room where the sunlight or daylight is abundant. If this alone were accomplished and the children of the family not permitted to enter the room, I confidently assert a diminution in the number of cases would result.

In the more favorable types of the disease, and especially in those patients who have been treated in institutions and a more or less complete arrest of the disease accomplished, there is theoretically very slight danger when we reflect that in the majority of cases the expectoration is expelled most frequently in the morning before rising, and after going to bed. Hence, the patient's room should, for practical purposes, be the only infected place in the house. Much less danger exists in such a room than is popularly imagined if the mouth is covered during expulsive coughing and every advantage is given for light and air. A white coverlet which can be sunned and aired or frequently changed is an advantage for bedridden patients. Cloths which may be used to wipe away expectoration may be deposited in cheap paper bags. Drooping moustaches and beards should

Digitized by Google

be trimmed away. A still further refinement is the use of a mouth wash of borax and soda after the morning and evening cough. Disinfectants are of little value in my opinion, since they are seldom strong enough and tend to produce a false sense of security. Boiling-hot soapsuds are of great value and always available, and I am one of those who advocate using the simplest means to accomplish our end in sanitation, which for the great part has to do with poverty, ignorance, and inefficiency.

Many persons are greatly disturbed over the danger from kissing, or from the use of the same spoons and glasses which the afflicted member of the family may also use. While separate articles of this kind should be advocated, I venture the statement that there exists much less danger from these sources than is popularly supposed. Soap and water, the great civilizers, are here, also, our protection.

This leads naturally to the question of the disinfection of rooms and clothing of the tuberculous, and a consideration of the length of time during which the bacilli may retain vitality. We know, for example, that strong sunlight will sterilize dry sputum in from two hours to two days; on the other hand, deposited in dark corners, sputum may retain virulence from three to four months. A large number of bacilli die when thoroughly dried and exposed to the air without light, but more when even diffused daylight is present. It is consequently very unlikely from any investigation thus far made that the dust in very well-lighted rooms has much infective power. Cleansing and disinfecting with bichloride of mercury or carbolic acid is more certain to destroy the infection than fumigation, as frequently carried out. But formaline fumigation has now been made so simple and inexpensive that it should always precede cleansing. Sulphur or formaldehyde candles are altogether too uncertain. Formaline vaporized by the lime or permanganate of potash methods has simplified its use and made it more efficacious, though even under good conditions it may fail to disinfect, and thus do harm by a false feeling of security which frequently results in careless cleansing. With a mixture of 12 oz. formaline and 6 oz. of permanganate of potash to each 1,000 c. ft., placed in an old dish-pan on a few newspapers one should easily fumigate the average sleeping room with a minimum sacrifice of time and expense.

The method now in use in New York City, whereby for 1,000 c. c., 12 oz. of formaline is mixed with 4 oz. of concentrated H_2So_4 and then 1 lb. of unslaked lime is added, is the one which we employ at our little hospital and is yet cheaper. Neutralization by ammonia vapor boiled in the room is quite an advantage if the room must be occupied at once.

It is impossible to enumerate all the methods of conveying tuberculous infection from one person to another. The popular fear has reached a point far too high and we have long been obliged to counteract the unreasoning attitude of unscientific persons who are to be considered intelligent on most subjects. We are questioned about the danger from books, money, telephone transmitters, and in fact anything which the poor leprous consumptive may touch, taste, or handle, and it should be our duty to explicitly state that

Digitized by Google

from all the observations thus far made, we are confident that these agents are of vastly secondary importance, if of any importance. Moreover, it should be our duty to show to the public that prolonged intimate association with careful consumptives is perfectly possible without danger to the person in ordinary health.

ADIRONDACK SANATORIA FOR TUBERCULOSIS. SOME SUGGESTIONS FOR VERMONT.

BY REDFIELD PROCTOR, JR.

Of the various sanatoria on or near Saranac Lake the Adirondack Cottage Sanatorium merits our first attention. It is the oldest, the most unique in design, and is at present the largest. This institution was founded in 1884 by Dr. Edward L. Trudeau and is in every sense charitable. Each patient pays $5.00 per week, although he actually costs the institution nearly double that sum. In 1904 it was actually $9.68. The yearly deficit is made good partly by a sinking fund and partly by annual voluntary subscriptions. It has a capacity of slightly over a hundred patients, and in summer this number is somewhat increased by the use of tents of an improved form. There is a main building which is really an administration building but which also contains the laboratories, etc., including rooms for a few patients. Nearly all the latter, however, live in separate one-story cottages holding four to six each. Some are used by men and some by women and all consist of a living room, bath room, store room, and four to six single sleeping rooms. The newer ones are built of yellow brick and stone, lighted by electricity, heated by hot water and fireplaces, and with each room opening directly onto a covered veranda. They cost approximately $5,000 and are models of convenience and comfort. There is a chapel, library, post office, open recreation building, infirmary, house for the resident physician, and laundry. A great majority of the buildings have been donated as memorials. Dr. Trudeau speaks of the founding thus:—

"Thanks to the generosity of friends, I was able to collect $5,000 and with this bought a few acres of land on a sheltered hillside not far from the village, which seemed eminently suited for the purpose. Since segregation of patients was the aim held in view, I erected two small buildings. The first cottage consisted of one room and a small covered porch. It was heated by a wood stove and lighted by a kerosene lamp. It held two patients and cost $350. The requirements for admission have always been that the applicant should be in the earlier stages of the disease and that his or her pecuniary circumstances should be such as to make it impossible to pay the usual price asked at the hotels or boarding houses of the region."

The nominal stay for each patient is six months, although this is often

Digitized by Google

somewhat extended. The professional staff consists of a resident medical director, an assistant physician and three trained nurses, two being located at the infirmary and the third acting as cottage nurse. The duties of the latter consist of attending to the petty illnesses of such patients as may need attention, but are not ill enough to require removal to the infirmary. An additional charge of $5.00 a week is made to infirmary patients.

The state of New York completed and opened during the middle of last summer its Ray Brook Sanatorium on a wooded hill about three miles from the village. The present building is simply a nucleus for a large institution and consists of a four story central portion designed as an administration building, including laboratories and rooms for doctors, nurses, and domestics. On either side are large wings connected by wide corridors. The latter are designed as solariums. The patients are mostly in single rooms, although there are rooms with two and a very few with three beds. This institution is free to residents of New York State and open to them only. Nearly a hundred patients can be accommodated. Last summer before all of the present building was completed there was a large tent colony on the hill in the rear, and there are a few very inexpensive but comfortably built cottages large enough for two. A word more should be said of these. They are built about two feet above the ground, with a covered porch across the front. In the center is a Dutch door, and each cottage has five windows, two clothes closets, and a stove. These are warmly constructed with double boarding, paper and clapboards, and cost only $350 complete. The staff at this institution consists of a resident medical superintendent and, at present, two assistants with several nurses. Examiners for this sanatorium are located throughout the state, although admission rests solely with the medical superintendent.

On Lake Kushaqua, about fifteen miles from Saranac Lake, is located Stony Wold Sanatorium, founded and mainly supported by ladies of New York City. Only women and children are admitted. Many of the patients receive treatment free, while others pay varying amounts. The buildings were opened in October, 1903, and accommodated sixty-three patients, including twelve children. The plan comprises a central administration building, designed for four dormitory wings, but only one has as yet been erected. There are never, except in case of the children, more than two patients in one room and usually one of these sleeps on the porch. Bath tubs and set bowls are located on each floor, but no washing arrangements are allowed in the patients' rooms. The administration building contains, besides the usual offices, laboratories, etc., a very large general living room for the patients, with a pool table, piano, and a stage for entertainments, numerous small sitting rooms with fireplaces on each floor and a most attractive and sunny dining hall. The location is on rising ground close to the edge of the lake. The resident staff here consists of a medical director and an assistant physician, a lady superintendent and three trained nurses, one exclusively for the children.

Sanatorium Gabriels, at Paul Smith's station, ten miles from Saranac Lake,

Digitized by Google

was founded in 1897. It is maintained by Catholic sisters but takes patients without regard to race, creed or color. There are two buildings and a cottage, and it is designed to make additions in the way of separate buildings. The nominal charge is $10.00 per week, but provision is made for some charity patients.

The Reception Hospital, located in Saranac Lake village, is an institution a demand for which has gradually arisen from the peculiar situation existing there. It may be correctly termed an emergency hospital for tubercular patients. It is charitable, since the patients pay but $7.50 per week, although the actual cost per patient is between $11.00 and $12.00. For 1905 it was exactly $11.70. The Hospital has been in existence five years, and since the completion of the new building last February twenty patients are accommodated. It was founded and the entire annual deficit is defrayed by a philanthropic woman, Miss Mary R. Prescott, who was herself once a patient. There is one three-story building containing, besides the rooms for patients, rooms for three nurses, the necessary domestics, complete laundry and kitchen arrangements, six bath rooms, an office, parlor, and elevator. With two exceptions the patients have single rooms. Each patient's room on the first and second floors opens directly onto a partially sheltered veranda, which enables the bed patients to be rolled out of doors through the day. Great care was taken in the construction of this building to avoid cracks and projecting corners. There is no resident physician, but four of the leading specialists of the town give their services free daily for three months each year. Three trained nurses are employed, as usually about half of the patients are confined to their beds. To quote from a recent annual report:—

"The Reception Hospital is chiefly for the care of tubercular patients who come to Saranac Lake with the expectation of admission to the Adirondack Cottage Sanatorium but because of acute or advanced illness are refused admission and are unable to receive suitable care elsewhere at a cost within their means. Two months is the normal stay of each patient." It will thus be seen that all classes are treated here, though of course the primary object is to help as large a number as much as possible.

So much may be said by way of description of the various Adirondack institutions for the treatment of tuberculosis, and now let us, if possible, draw a few helpful suggestions from them for our own state.

The first question to ask is, "Have we the same or as good a climate in Vermont?" Climate is a very uncertain thing and one that experience only can determine. We cannot take a map and selecting a place at a given distance from the sea and with a certain altitude, say "There is a good climate for tuberculosis." The Adirondack climate is known to be good, but no one can, except to a limited degree, explain why. Some elevation is known to be beneficial, a sandy soil is desirable, woods, especially evergreen woods, are good, and we have all these. Let us now consider briefly for a few moments some of the features about Saranac Lake which are known to be advantageous for the tubercular patient.

Digitized by Google

The altitude is only about seventeen hundred feet, which can easily be equalled or exceeded in a number of accessible places in Vermont. It is advisable to have an institution of any size reasonably near a railroad. All of the Adirondack sanatoria I have spoken of are, with one exception, most fortunately located in this respect, but this exception is the largest and most important of them all. Places could be easily found in the Killington range east of Rutland or in the vicinity of Lake Dunmore and elsewhere in Vermont that have the desired altitude and still are near enough to the railroad.

The soil immediately surrounding the institution should be sandy or at least dry. The dryer the air the better, and of course low, marshy or wet land would be very bad. However, there is no objection to the right sort of river or lake. Two of the Adirondack sanatoria above referred to are near streams, one of them quite slow flowing, and a third is very close to a large lake. Around only one of these institutions is the soil exceptionally sandy, but otherwise this is of necessity the poorest location, being on an almost treeless hill in the center of a village and absolutely unsheltered. Prolonged periods of dampness and sudden changes are to be avoided, and yet both of these, especially the latter, are not unknown even to Saranac Lake.

The great extent of the Adirondack woods is undoubtedly an important factor, perhaps the most important being the precluding of all dust and dirt necessarily circulating through the air in or near a town of any size, especially a manufacturing town. There are no uninhabited wooded tracts in our own state approaching in extent that which surrounds Saranac Lake, yet there are numberless ones large enough and with sufficiently few inhabitants to insure air reasonably pure and free from these objections. Silver Lake, for example, offers a most attractive sheet of water at a sufficient altitude, surrounded by woods with a fair sprinkling of evergreens. The cleared land near the lake shows sand or dry gravel composition, and the spot is well sheltered. Its distance from the railroad is objectionable, but doubtless its present inaccessibility could be somewhat overcome. As a noted specialist once said, "To the majority of tubercular patients *how* to *live* is of more importance than *where* to *live*."

Secondary in importance to the location are the buildings, although these should be given very careful consideration. Two plans with numerous modifications at once suggest themselves. The cottage and the single building types. A combination of the two is possible. Only one of the Adirondack institutions which we have been considering is strictly speaking of the cottage type; two are combinations to a limited degree and two are strictly of the single building type. There is no reason to suppose that more cures are affected in one form of institution than in the other. Several points, however, will merit careful consideration.

The cottage form is certainly the most picturesque and in many ways the most attractive, not only to the casual observer but also to the patient. It is most flexible in point of growth. A comparatively small sum of money procured at any time for building purposes can at once be used, with im-

Digitized by Google

mediate increased capacity resulting to the institution. The first cost of a cottage institution designed to hold fifty patients would be somewhat greater than one of the single building type, and the expense of maintenance and running would certainly be considerably greater. The amount of plumbing is increased. Each cottage has its separate heating plant and with the larger exposed surface an additional amount of fuel is consumed. More help is required and the numerous petty inconveniences and minor expenses arising from so many patients being in separate buildings should be carefully weighed and considered. Take, for example, the care of patients who may be temporarily confined to their rooms but not ill enough to require or warrant removal to the infirmary, or perhaps the infirmary may be full, nurses must go back and forth, all meals must be carried from the administration building, and zero weather with two feet of snow are also factors to be faced. It is possible to suppose the case of a patient unable to walk from a cottage to the main building yet who if once there would need almost no attention.

The single building type of institution has numberless possible variations in point of design. Even in this type it is possible for the patients to be practically as isolated as in the cottage type. Single or at the most double rooms prevail throughout those of this type which we have considered. In none of the Adirondack sanatoria are found large wards. Precaution against the too free transmission of sound should be taken. The rooms, particularly if designed for one only, need not be large but should be of more than average height and capable of quick and complete ventilation. Two windows are of course better than one, and windows on different sides are a great advantage. If possible the rooms should have sun, though with the patient sitting out all day anyway this is not as essential. Wide Dutch doors opening direct from patients' rooms on to the veranda, which are noted in some of the new buildings, are very convenient, with bed patients. Practically speaking it is impossible to have too much piazza. They should be on the three sunny sides of the buildings at least, and should be much wider than the ordinary house porch with suitable wind breaks even in summer. One point more in reference to the rooms. Some institutions have clothes closets and some do not, but if these are provided in each room they should be very thoroughly ventilated with an outside window. I do not know any real reason for prohibiting washing-arrangements in the patients' rooms, which we noted to be the case in Stony Wold. Little need be said of the remainder of the interior of the buildings. The dining-room and all general living rooms should be larger than normally required for the given number of persons who are to use them. Unless well provided with elevators no building should have more than three floors, preferably only two. An administration building of such shape as to allow the addition of several wings is the only form of the single building type flexible enough in point of growth. An excellent example of this is seen in Stony Wold.

A sanatorium for the treatment of tuberculosis can well be started on a small scale, though of whatever type desired. A striking example of this is seen in the Adirondack Cottage Sanatorium, which sprang into successful

Digitized by Google

existence on $5,000. The case of the new Reception Hospital at Saranac Lake is well worthy of attention. It holds twenty patients. The land cost slightly over $2,000 but is in the village where land is most expensive. The main contract for the building was $15,500 and an additional contract to cover heating, lighting, fire escape, etc., amounted to $4,350. The furnishings cost $3,000. This with sundry other items, including architects' fees, gives us a total of approximately $27,000. Surely in the face of these figures Vermont should at least start an institution for her own consumptives.

And now before closing let us consider one more point, which in importance should logically come first of all. "Are sanatoria for pulmonary tuberculosis really desirable?" From practically every standpoint they most certainly are. They are the best possible precaution against the spread of this dreaded disease and if properly conducted the patients therein are vastly more comfortable than elsewhere, Of course this does not refer to such persons as are able to turn their own home into practically a private sanatorium. At such an institution all are there for the same purpose and all take the treatment together, which greatly relieves the unpleasant features connected therewith. They are the best possible means of educating the general public. But their records are the strongest argument in their favor. The Adirondack Cottage Sanatorium shows an average for the past few years of twenty-five per cent discharged as apparently cured and fifty per cent with the disease arrested, giving us a total of seventy-five per cent well on the road to recovery, sixteen per cent more show improvement. A state institution, without in any sense being a home for incurables, would doubtless be compelled to open its doors to a slightly greater per cent of unfavorable cases. In the first seven months the New York State Sanatorium showed thirty-seven per cent of its patients apparently recovered and thirty-five per cent more with the disease arrested. Cannot Vermont do as much for her own unfortunates?

THE DUTY OF THE LOCAL BOARD OF HEALTH IN THE CAMPAIGN AGAINST TUBERCULOSIS.

BY ALEXANDER M. WILSON, SECRETARY OF THE BOSTON ASSOCIATION FOR THE RELIEF AND CONTROL OF TUBERCULOSIS.

Dr. Osler, lately of Johns Hopkins University and now Regius Professor of Medicine at Oxford, recently said, "Of late years there have been done in this country three pieces of work relating to tuberculosis of the first rank—that of Trudeau in the Adirondacks, enforcing on our minds the importance of the sanatorium treatment of early cases; that of Biggs and his associates in the New York board of health in demonstrating how much can be done by an efficient organization; and, thirdly, the work of Lawrence F. Flick, the director of the Phipps Institute, in demonstrating by a long and

Digitized by Google

laborious research the dangers of the house in the propagation of the disease." It is relative to the second of these notable pieces of work that I wish to direct your attention briefly; and one could not touch on this subject at all without paying tribute to the pioneer work of Biggs in New York.

It is curious that the world waited more than a decade after tuberculosis had been shown conclusively to be a communicable disease, before any effective steps were taken by any municipality to put in practice the measures that followed as the logical conclusions to Koch's work. And that now they seem so obvious to us does not lessen the credit due to Herrmann M. Biggs, who in 1894, against the opposition of almost the entire medical profession of New York City, instituted the measures for the administrative control of this disease which have long since been approved by those same physicians, and which have placed New York in the van of the forces contending against this awful scourge.

When New York finds the site for the municipal sanatorium she stands ready to build, she will seem to have completed her armament against tuberculosis, and while some parts may need strengthening, she will present an example that may well be copied in its entirety by any city of considerable size.

In considering the problem, however, as it presents itself to the local board of health in a small city or rural community, there are several features of the New York scheme that will need modification. For example, the special tuberculosis dispensary treatment of the sick is out of harmony with the good country habit of paying for what you get, and none would for a moment consider this a proper function of a board of health in a small city. Again, the question of a sanatorium in a state like Vermont, resolves itself practically into the problem of establishing such an institution through the instrumentality of the state, although some of your cities may well follow the example of Oil City, Pa., which has started a tent colony for its own consumptives.

Hospitals for advanced cases are not in the same demand here as in the congested centres of population, where so many consumptives are among the very poor, where they are without proper care, and where they are sources of infection to large numbers of persons. A ward of the local almshouse or perhaps of the city hospital will doubtless continue to serve as the only resort to the helpless. But here a distinct duty rests with the community, and most heavily on the guardians of its health, to see that consumptives in almshouses *are* in separate wards or buildings, and are not spreading infection to other unfortunates.

The deed of forcibly removing from their homes consumptives who wilfully refuse to exercise the ordinary precautions and thus are a distinct menace to society, occurs quite often in the large city, although New York and Boston have, I believe, the only boards of health in the world which exercise this right.

Aside from the exceptions noted, the local officer in Vermont may, and

Digitized by Google

I am told, does in large part, carry out the measures advocated and so well executed by Dr. Biggs in New York, of course adapting them always to local conditions.

There should be free bacteriological examination of sputum—here done by the State Board of Health—so as to offer every encouragement and help toward the early recognition of the disease, for to the early case alone is there offered the prospect of recovery.

Notification of the health authorities should be compulsory on the part of the attending physician—how else shall the Board of Health know its problem so that it may intelligently attack it? This should be attended by no publicity, and the interference of the health officer should not be necessary so long as the patient remains under the care of a physician who agrees to carry out the instructions of the Board of Health. While compulsory notification has always met with opposition, it would seem that objections to it could easily be obviated where all physicians are personally known to the health officers, and where its entire innocence and beneficence can be so readily explained.

When the existence of a case of tuberculosis is thus made known to the Board of Health, then that body owes to the community and to the family of the patient the duty of making sure that the well-known precautions as to the care of the sputum and general cleanliness are carried out. The assurance of a reputable physician in attendance should be all that is necessary, but it would be well to place in his hands carefully prepared instructions on which to have his assurance based.

On the death of the patient, or in case of his removal from the dwelling, the rooms should be thoroughly disinfected and cleansed and in many instances the house should be renovated.

In the hands of the Board of Health should be the enforcement of an anti-spitting ordinance, including in its provisions the floors of cars, public meeting places, and of workrooms where large numbers of persons are congregated, as well as sidewalks. A reasonable fine should be the penalty and it should be inflicted often enough to warn a forgetful public of the dangers lurking in this filthy habit.

So much for the purely administrative duties of the health officer. If these measures are faithfully and efficiently carried out they will slowly awaken each community to the dangers from this disease and will do much toward preventing its spread; but we look to the health officer for something more than the mere discharge of his duties. He should be a leavening influence in his own community, moulding the opinions and habits of its people to accord with the teachings of science, showing them by precept and example that fresh air and a regular life are sworn foes to this disease. Leaflets such as the one prepared by your state commission should have the widest circulation. Such literature may be given out in the schools, in churches, at town meetings, wherever the people can best be reached. Five years ago the health officer in my own town of Brookline, Mass., prepared a somewhat similar leaflet of instruction regarding tuberculosis and

Digitized by Google

had it distributed by the police to every house in the town. It will only be by the most persistent work of the leaders of sanitary reform that the ignorance that has fostered this disease which Oliver Wendell Holmes well named "The Great White Plague" will be overcome. And Vermont, with its natural advantages of climate, with its population so largely rural and so well housed, with its high degree of education and culture, should assume a position of leadership among the states in eliminating a disease that is so closely identified with bad housing, unhygienic living and ignorance.

I cannot better close than by quoting from Dr. Biggs: "This is the urgent sanitary problem of the new century. In no other direction can such large results be achieved so certainly and at such relatively small cost. The time is not far distant when those states and municipalities which have not adopted a comprehensive plan for dealing with tuberculosis will be regarded as almost criminally negligent in their administration of sanitary affairs, and inexcusably blind to their own best economic interests."

IS MEDICATION OF SERVICE IN THE TREATMENT OF TUBERCULOSIS?

By Dr. C. W. Peck, Brandon.

It is not my purpose to discuss the entire history of the treatment of tuberculosis, but to call your attention briefly to some of the absurd and foolish measures in the treatment of this disease in the past, contrasting them with the present, for the mistakes of the past are surely the best guides for the future.

Since we have a germ disease to study and treat, we should first make ourselves familiar with the origin, development, growth and communicability of the germ as well as the best methods of managing the same, both within and without the system.

We made two grave mistakes early in the treatment of this malady after it became known to us as a germ disease. We did not study sufficiently the peculiarities of the germ, its origin, its great communicability, its almost universal prevalence in the higher and lower orders of animals, the length of time it could remain dormant in the system waiting its opportunity to attack the debilitated and weakened organs.

Again we underestimated good blood, strength, vitality and fresh air as barriers against the invasion into the system of the germs of this disease.

I think even to-day we are overlooking the fact that an overburdened and obstructed portal circulation from overfeeding is an embarrassment to

Digitized by Google

the vital forces. It lowers the powers of resistance against all poisonous germs, particularly this one. Avoirdupois weight does not mean health and strength or powers of resistance from disease, as many members of the profession would make us believe at the present time. One of the great mistakes in the past has been the universal practice of giving large doses of C. L. O. *indiscriminately* from the beginning to the end of the disease without considering the ability or inability of the digestive organs to digest and assimilate the same.

No man of good observation and experience can doubt for a moment the great value of this remedy as a general tonic in wasting diseases when it is well borne and assimilated, particularly among children. I have no doubt many cases have improved and gotten well under its administration, whereas others have been nauseated to death by its constant and unwise use.

Every case of consumption is as much a law unto itself in the matter of treatment as a case of pneumonia or typhoid fever, and should be studied and treated upon the same general principles, particularly in its first stages. Next came the pneumatic cabinet with its medicated air and lung gymnastics to kill the germs within the bronchial tubes. Even to this day it is hard for some members of the profession to give up the idea of fumigating a man's lungs to destroy the tubercle bacilli the same as you would fumigate a room infected with the germs of small pox or scarlet fever. I think it was in the fall of 1890 Prof. Koch discovered the so-called sure cure for consumption in the way of a lymph. Well do I remember our lamented brother Prof. Lyndsly leaving his class in bacteriology in New York and sailing for Berlin eager to grasp the long-looked-for panacea which was to rid the land of this dreadful disease, but alas! our knowledge was not sufficient, we were too ignorant of the subject, the profession had not then learned that a man is not a machine, and that germ diseases when once established in the system had to be removed by a natural process, according to the natural laws which govern them and their action within the system, and that the powers of life were the strongest barriers against the inroads of these germs, as well as the only eliminator, and when they were once established within the system no power but the power of life could dislodge them, and that all remedies of whatever name or nature must work directly or indirectly along this line.

Perhaps the next period in the treatment of this disease might appropriately be called the *creosote period,* which occurred about ten years ago and still rages to some extent, another fad of giving a disinfectant in the form of creosote to destroy the germs, as high as forty drops or more being given three times daily.

What a fortune a patient must have had in the way of a stomach who could stand these big doses, three times a day, confined in a close room, impure air, little or no ventilation. Could any plan be conceived which would be more injurious to a delicate individual afflicted with this disease? Contrast this form of treatment with that of good food, open air, and tonics. It

Digitized by Google

is so hard for the profession to understand that the human family are born, developed, sicken and die by a purely natural process, unless perhaps the doctors kill them. Something mysterious either in the disease or the treatment seems to be the universal want to satisfy the people and many of the profession, not content to work with nature and through nature's laws. They seem to forget that a better physician than any of us proportioned the oxygen in the pure air so necessary to the oxidization of the blood, to invigorate the nervous system, to aid in the process of digestion, to eliminate waste and poisonous germs and keep the system in a normal condition. A better chemist than any of us long ago gave us that perfect and invaluable mixture called milk, so well adapted to the human stomach of all ages. The great originator of all germ life never intended we should be slain by the thousands by so inferior a germ as the tubercle bacilli, and we never should have been had we adhered to the original plan of pure food, pure air, and pure laws. The science of medicine is now slowly but surely working out the great problem of life-saving between the poisonious germs of our overcrowded cities and the human family. We are in command of the germicides. We know their value and their action outside the human system in the way of arresting the communication of these germs from one individual to another. The best methods of applying them and the education of the people to coöperate with these methods are still somewhat an open question. We are coming to learn that we must depend entirely upon the vital forces of the individual for the internal treatment of this disease. The indiscriminate use of any remedy save pure air is as liable to do harm as good. It is no longer a question of treating all cases alike but one of applying the proper remedy at the right time to the right individual. The natural tendency at the present time is towards the open air treatment to the exclusion of all others. Twenty-five or thirty years ago we all gave cod liver oil to every body with a cough and paid no attention to the condition of the individual and did not sufficiently study our cases. Next came the pneumatic treatment in the same blind way. Then the creosote rage seized us and we gave that to every body, thinking we could disinfect the individual by filling his system with creosote if he could not improve on medicated air in the cabinet, never one stopping to think these methods were *unreasonable* and *impossible*. Now we are all inclined to the fresh air treatment exclusive of all others in the same blind way. We run in schools like fish. A medical rut once established by a real or supposed superior mind seems large enough for the whole profession to move in. Some distinguished medical man tells us a weak and debilitated stomach can digest twelve eggs and six quarts of milk a day, and all hands try it.

Undoubtedly the best system of treatment yet established by the profession for this disease is the open air treatment, which is quite correct when properly directed, but should we abandon medication? Should we give up everything to the open air alone, as the tendency now is? In the open air treatment we surely aid nature to throw off, so to speak, the poisonous germs. Can we do no more? Are there no other aids to nature? Is med-

Digitized by Google

icine so disappointing that we are losing our faith in its ability to aid us in the healing art after all these long years of study and experience? At last we have discovered the correct principles of assisting nature. May we not do something by proper alimentation, may we not do harm by indiscriminate and overfeeding, may we not do something with tonics, with C. L. O. even, long since condemned? Is not the whole problem to be solved by a wise and scientific application of any remedy given according to its physiological action which will improve the vital forces? One of the great questions for us medical men to settle is, How do sick people get well? Is there but one way and that by assisting nature to do the work? Is there any process but a vital process which enables the poor victim of a tubercular deposit to eliminate these germs? May we not improve the whole system of treatment of all diseases, tubercular in particular, by a more careful and thoughtful study of our patients' condition and needs, and the application of all or any remedy for each individual case, giving each and every case a careful consideration and analysis, taking the fresh air as a basis, assisted by tonics, alteratives, stimulants or narcotics when physiologically required?

To recapitulate:—

May I not say all sick people who recover do so through the action of their vital forces and no other? All remedies should be given to aid directly or indirectly these forces. Is not every particle of food given over and above what is digested and assimilated, a detriment and a hindrance to the action of the vital forces?

ADDRESS ON TUBERCULOSIS.

By Hon. Henry Ballard, Burlington.

Now, the Doctor has said that I must talk about a legal question—that I am to talk about "Compulsory Notification" in tuberculosis, as it is stated in the program for this meeting. That is, the right of the state, through its Board of Health, to know how many cases of tuberculosis there are in the state of Vermont all the time. Now is n't this a right that the state can properly claim, and ought to require, that it can call upon the physicians or upon other citizens to give information to the State Board of Health, that a record may be made of the fact that such and such persons are victims or subjects of tuberculosis? That question reaches back to the fundamental principles in our government: The right to inquire of a citizen as to his condition; is he suffering from any contagious disease or otherwise, which makes him a menace and source of danger to others with whom he comes in contact?

Now, when this act was drawn—and I had the honor along with Dr. Lewis, of Burlington, of drawing up the act—I took it to the Legislature two years ago last fall and introduced it, and after a hearing had been had

Digitized by Google

before the joint health committee, it became a law, without one single voice being raised, or one vote against the act, and it is now on the statute book as Dr. Lewis and myself drew it, without the dotting of an "i" or the crossing of a "t" in respect to it.

Now, then, the act creating the tuberculosis commission provides, in the first place, for the appointment by the governor of five members, three of whom shall be legally qualified physicians at least, and two others besides, and the purpose is, as set forth in the act, to inquire in respect to the prevalence of tuberculosis in Vermont, and the need of a state sanitarium for consumptives, and to make a report at the next session of the Legislature.

At the same time that this act was passed, another act was passed, and it is now the law of the state, and has been ever since, which provides that "Every physician engaged in the practice of medicine in the state of Vermont, shall immediately upon passage of this Act, submit to the secretary of the State Board of Health, the names and addresses of all persons under his treatment for tuberculosis, and thereafter each case within one week after applying for treatment." That the secretary of the State Board of Health shall keep a record of all cases reported to him, not for publication, but for such purposes as are necessary for the State Board of Health in the discharge of its duties; and immediately after being notified of each case, shall send printed circulars containing proper information in regard to the disposal of sputum, and such other information as may be necessary for the welfare of the person afflicted and for the protection of others. Failure on the part of a physician to conform to this act will constitute a misdemeanor, punishable by a fine of not less than five or more than fifty dollars.

This act was passed at the same session of the Legislature, and it has been the law of our state ever since and is the law now.

Dr. Holton has told me before, and again to-day, that there have been reported to him not one half as many cases of tuberculosis as there have been deaths from the same disease during that time. The physicians of the state have not done their duty under this law, and now, why not? Why not? I say. What is the objection or reason, if any, for not complying with this law? Has the state the right to ask for this? The state does not ask for it for the general public, but for the use of the State Board of Health, and it does not go beyond that. Now then, that, as I say, reaches to the fundamental principle of our government. Benjamin Franklin said, more than a hundred years ago, that "the public health is public wealth." Nothing is truer than that. The well man is self-supporting, self-sustaining; he supports himself, and whatever he earns over and above his own support, is added to the value of the state. The well man is a producer. The invalid is a burden—he has to be carried and supported by somebody. Therefore the state is interested in the health of every one of its citizens,—and for that matter, every individual is interested in the health of every other individual. The invalid is a burden that has to be supported by the state or by his friends, and that takes so much from them and so much from the wealth of the state.

Digitized by Google

Therefore the state is interested in the health of every one of its citizens, man, woman or child.

Queen Victoria's eminent prime minister, Disraeli, said, that "the health of the people is the first duty of the statesman." *Public health is public wealth!* A sick person, an invalid, is a burden. Therefore it is for the interest of every citizen to keep himself well, and to endeavor to keep everybody else well; that is his contribution to the public good. Public health is public wealth. It is the first duty of the statesman, as Disraeli said—the health of the people.

Now, then, I say the state has the right to take steps to find out how many are sick and how many well. In a matter of this kind, when over a hundred thousand—yes, over one hundred and twenty thousand persons die every year (according to the last census) in this country of this disease, and medical science has reached the conclusion that it is a preventable disease and a curable disease, and yet, according to the last census, and those that preceded the registration in regard to it, does not cover the entire country. There probably are over one hundred and sixty thousand dying every year in this country. And who are those that die of this disease? Are they the old people? No; the consumptive seldom dies an old person. The best statistics that we have on this subject are those of New Hampshire. For eighteen years that state has kept a record of all deaths from all diseases, including consumption, and this fact was shown: That the majority of those that died between the ages of twenty and thirty years, forty-one per cent and a fraction died of consumption. Of all those that died between the ages of thirty and forty years, thirty-one per cent and a fraction died of consumption. It is a disease that feeds and fattens on the young. Just think of it! Is it not a startling fact that so many young men and women from twenty to thirty and thirty to forty years of age, die of this disease? It is the most expensive disease that one can die of, for the reason that the death is long and lingering, the average time of sickness being from two or three to eight or ten years. The sufferer with tuberculosis is an invalid that has to be carried and supported for a long time. For this reason the state has an enormous interest in the health of its people.

In respect to this disease, here and in all civilized countries—for tuberculosis is a disease of civilization—those that live outdoors, live the life of barbarians like the native Indians or islanders of the sea, seldom, if ever, have tuberculosis. You have never heard of an Indian dying of tuberculosis until he got civilized by the habits of living like a white man in houses and closed rooms, getting into the white man's saloon and getting into a condition where he would take it. But look at the Indian! Look at his habits, his outdoor life in the open air. How does he carry himself? "Straight as an Indian" is a proverb. How does he keep his mouth? As everybody ought to except when talking or eating, shut, shut close. There is a good deal in breathing right. But how is a man to live and do the way the Indians do in these respects? Stay outdoors all that he can and keep the mouth shut, breathe through the nose. What is the nose for? Has it any more or

Digitized by Google

greater purpose than for breathing correctly? Why the Scripture is authority for this—I don't know but I am the one that discovered the Scripture authority for this. In the second chapter of Genesis, the seventh verse, if my memory serves me right, you will read, "And the Lord God formed man from the dust of the ground, and breathed into his nostrils (not the mouth) the breath of life, and man became a living soul." How much there is in that verse! It begins with the mystery of the creation of man and ends with the suggestion of his immortality. But this life begins with breathing the air; breathing it into the nostrils. Now that is the way to breathe. You never saw an Indian with his mouth open except when talking or eating—he always breathes through his nose. And this is one of the things which I always talk to the people, and I think it is one of the most important things. By so doing you keep the dust out of your lungs, as the nose is lined with a moist membrane and has a growth of fine hair on it, which filters and strains the air, and I would advise all doctors to tell their patients who have any suspicion of lung trouble to breathe in this way.

Now then, this right of notification as to tuberculosis is based on the right of the government to take steps to find out what it has a right to know—everything that affects the good of the people.

Now, when this act was drawn—the first one—we drew a second act, which passed in the same way, with no opposition. It provided that "every physician engaged in the practice of medicine in the state of Vermont, shall immediately submit to the secretary of the State Board of Health, the names and addresses of all persons under his treatment for tuberculosis, and thereafter each case that comes to him, within one week after applying for treatment." The secretary of said board keeps a record, not for publication but for such purposes as is necessary in the discharge of their duties; and then he communicates with those persons, sending them circulars and giving them proper information in regard to the disposal of sputum, and such other facts, hygienic or otherwise, as are necessary for the welfare of the person infected and for the protection of the community in which he lives. You will readily see that the second act supplements the other. There was not a vote against it. *It is the legal duty of every physician to notify the State Board of Health* in accordance with the provisions of this second act.

Well now, the physicians have not done their duty in respect to this. Dr. Holton said he had not half as many names reported to him as had died of tuberculosis during the same period of time. Now then, in regard to compulsory notification; the law requires it and all physicians should obey the law. You physicians that have a patient, sick with tuberculosis, should send the name quietly and promptly to the secretary of the State Board of Health. What is he to do with it? He is to make a record of it, and then he can send to that person printed matter, pamphlets and literature to educate him, to give him the means of educating himself how to live so as to rid himself of this disease and to avoid giving it to others.

The Legislature last fall supplemented the acts of two years before. Our

Digitized by Google

Board were inclined to favor the establishing of a state sanitarium in this state at once that was going to cost in the neighborhood of $50,000; but this year, you all know, was a sort of farmers' year and they had the right of way; they elected the governor, and he is a good governor. So this year instead of introducing the bill for the establishing of a sanitarium, our commission thought, as the Legislature had already appropriated $60,000 for the farmers' building in Burlington, it was not best to introduce the bill, that the Legislature would not care to appropriate any more. So instead of that we introduced the bill continuing the commission for the purpose of conducting a sort of campaign for the education of the people upon the subject. In other words, carrying light and learning on this subject to the people of our state.

During the past winter our commission has been holding meetings in all the counties in our state, I think, save one or two,—public meetings. Before we started on that campaign, we debated the question whether the people could be made to take an interest in a subject of this kind; whether they would care to come out and hear doctors—all doctors except myself—hear it discussed, and take an interest in it. But that was what we were called upon to do, according to the bill, and I will say this: I have been before the people of the state of Vermont a great many times, on a good many subjects, as some of you know; I commenced talking years ago for a man by the name of Abraham Lincoln. I have done a good deal in that way. To our surprise, and we were happily surprised, at every meeting during the winter in the coldest weather, and we had some that was very cold,—to our surprise, as I said, we had unexpectedly large audiences, men, women, heads of families, high school boys and girls, who came out to listen to the interesting gentlemen who make up the commission, Drs. Grout, Bryant, and the others, and they listened with attention and earnestness to all the talk that the gentlemen of the commission gave. They showed an interest in it, and the result of it is, we think and trust, that some of you in the different towns will have found out that these meetings were successful and productive of much good, and that the people themselves in their own homes from their own knowledge must and will in time take better care of themselves.

Now it is a fact that there is no specific remedy for tuberculosis to be found in a drug store; there is none to be found in a saloon that is licensed to sell intoxicating liquor, and I thank God for that. The remedy, as Dr. Peck has told you to-day, is outdoors, in pure air. By the way, I always like to hear Dr. Peck talk, he is so much in earnest; he says things in such a way that it stays with you; you can't but remember it.

The people themselves have got to learn how to live, to live healthy lives. We have heard it from the earliest times that the farmer's life is the healthiest life. I say it is. They are out of doors from sunrise to sundown—outdoors all the time; but if at night, in a seven by nine room just about wide enough for a bed, a man and his wife and perhaps a child, a baby, sleep with perhaps only one window and that shut down, perhaps

Digitized by Google

with blinds on the outside and curtains on the inside down, that is not healthy at all, but unhealthy, very. That more than offsets the life, the vigor of strength gained from the outdoor life in the daytime. The farmer's wife and the farmer's children are very often the victims of not knowing how to live as they ought. They should be educated, and I trust the Health Officers and the medical men of the state will lend their services in the prevention of this disease by the hand of education. "Prevention is better than cure," you know. Now I advise that you give a watchful care to the farmers' homes, their buildings and surroundings, the cellar and the garret, windows, sleeping rooms, and their habits of life generally. Your advice to them is worth more than any drugs you can get in a drug store. We want you to make this effort to help along the crusade against this disease, and you as physicians can do nothing more serviceable to your patients or more deserving of remuneration than the giving of advice to teach the people how to live.

About this notification, and about the right of the state to compel it. The state is, as I have said, interested in the health of every man, woman, and child. If they are self-supporting they are valuable, useful citizens; if not, they are burdens. Therefore the state has a direct pecuniary interest in the good health of all the people and every man, woman, and child has a direct or indirect pecuniary interest in the good health of every other man, woman, and child. And this matter of notification is simply a step which the state takes through its Board of Health to find out facts which it has a right to know. That is all. Is there anything about it which should be kept a secret? Is it any disgrace that a person is sick? There is nothing of that kind at all, except that it is the result of their own wrong doing or misconduct. If a person inherits a tendency to disease, that is no disgrace. The names are required simply to be kept by the State Board of Health as a matter of record in looking after the interests of the people of the state; and it is the only way to get it. In my judgment there is not anything wrong in compulsory notification. It is right morally, and it is right simply because *it is the law.*

Now, doctors, if it be true (of course it was done from good motives) that you did not care to disclose the fact of patients sick with consumption, or did n't want to trouble to do it, you ought in every case to obey the law and give the names of those who have it. The names go upon the record, and that is all.

Yes, compulsory notification is right; there is no question about it at all. The way it is done it doesn 't expose anybody, but it is for their own good and for the good of their neighbors in the community in which they live.

Digitized by Google

THE TUBERCULOSIS PROBLEM.

W. N. BRYANT, M. D., SECRETARY TUBERCULOSIS COMMISSION.

"For men may come and men may go, but I go on forever," was the happy, care-free song of Tennyson's "Brook." The same words, but with a grim and sinster meaning which bodes ill for the peace of humanity, may have been the war cry of the demon of tuberculosis all through the past centuries, during which he has been gathering in his annual harvest of death, until this dread disease has become the greatest menace that has ever overshadowed mankind—till it has, in fact, threatened the physical integrity of the human race.

When a single disease demands a tribute from our country alone, of four hundred lives for each and every day of the year, it is not a matter for wonder that this question of tuberculosis occupies so large a portion of our thought and effort, both in professional and lay circles; that the daily paper vies with the medical journal in discussing ways and means to abate the monstrous evil.

And yet this present crusade, world-wide in extent as it is, against tuberculosis is of comparatively recent origin and is principally due to two causes—the discovery by Koch of the bacillus which causes the disease, and the remarkable results which have been attained in its treatment by the so-called open air method. But because the great interest taken in this line of treatment is a development of recent years, it does not follow that the idea is new. In most of the advance steps which science makes, the underlying, basic truths have long been known before their true value has been appreciated. This was true, for example, of vaccination. It was equally true of the open air treatment of tuberculosis.

Two hundred and fifty years ago the great English physician, Sydenham, advocated riding in the open air as a treatment for these cases, and states in his writings that he has by this means failed of cure in but few instances. And still, in spite of the prestige of his great name and influence, the conservatism of the profession—a disinclination to accept new views—kept them for two and a half centuries longer pinning their faith to the old dogma of the incurability of consumption, as indeed it was, from their view point.

Bodington in England in 1840, and Brehmer of Germany in 1854, revived the theory of Sydenham and erected the first open air sanatoria. But it was not until the researches of Koch and Pasteur in the eighties, that the true meaning and possibilities of the theory dawned upon humanity, until to-day it is universally recognized as the only treatment for tuberculosis to be considered. It is now an accepted fact, past the stage of argument, and the only points useful to discuss are as to how and where it may best and most successfully be administered, and how it may be brought within the reach of that great mass of indigent sufferers, who are compelled by neces-

Digitized by Google

sity to face the outcome of this dread disease amid the squalor and poverty of desolate and cheerless homes.

In considering this problem, we are brought face to face with two fundamental and conflicting propositions. First, that with the present condition of lack of exact knowledge about these matters upon the part of the people, it is extremely difficult and often impossible, in the average home, to obtain the conditions necessary to insure success in the open air treatment. The second proposition is that for the present, and for some time to come, the great bulk of these patients will be obliged to remain in the home.

There are at present, in this country, about 174 institutions devoted to tuberculous cases, while we have an army of half a million consumptives. Right here in Vermont we have probably from 1,500 to 2,000 cases with *no* place to which we may send them. (Thanks to the generosity of Senator Proctor, this will not long be the case.) With few exceptions, the institutions already existing are private enterprises and therefore expensive, making them quite beyond the reach of the majority of patients needing such treatment. It is safe to say that for a long time yet seventy-five to ninety per cent of the cases of tuberculosis will, of necessity, have to be cared for in the home. The only way, then, of reconciling these contradictory propositions, is to so change the conditions in the average home that these cases may be successfully managed there, and this can only be done by educating the family *away* from the customs and accumulated traditions of two thousand years.

This is no small task indeed and no brief one, and in the mean time the years go by contributing their awful quota of deaths from this disease, to which one tenth or more of the human race seems destined to succumb, unless we can alter existing conditions.

We are striving to promote this necessary education among the people by means of public meetings, addresses, personal advice, newspaper articles, and the distribution of literature treating of these topics. But probably no single method can compare in efficiency, as an educator, with a well equipped sanatorium where patients are personally instructed, by word and by example, in the things pertaining to sanitary living; taught what they *must* do and what they must *not* do, not alone to be cured of disease, but what is still more important, to avoid infecting others.

This modern crusade against tuberculosis is founded upon the theory that it is both curable (in the early stages) and absolutely preventable; and contemplates not only the cure of individual cases, but prevention of the infection being transmitted to others. For in no other way can we attain that degree of success which we believe possible—the stamping out of this dread plague as a prevailing disease among men. For instance, it amounts to comparatively little to cure a case here and there, provided that case is allowed during the process of cure to infect the other members of the family.

It is just here, as an educational factor, that the sanatorium seems a necessity to supplement and make efficient our work in the home, for it is in the home that most of our work for the present must be done. After

Digitized by Google

a few months' residence in an institution a patient, not cured perhaps, but with the disease arrested, may return to his home having learned those essential lessons of how to live, how to get cured, and how to avoid passing on his disease to others. The family are taught by his example the same lessons, as are also similar cases in the neighborhood, and educated patients like this, scattered here and there through different communities in our state, will prove a powerful aid in our warfare against this disease.

Yes, work of this kind is slow, but if persistently pushed is bound to succeed, if not in our generation then in the one to follow us. It is selfish, indeed, to limit our work and effort to that alone which shall immediately profit ourselves, with no thought of those to come after. But our work *does* tell, yes, here and now; already, with the meagre facilities we have had in the past, despite the prejudice and ignorance with which we have contended, the death rate from tuberculosis in the past twenty years has decreased from thirty to forty per cent.

This being true, with conditions as they have existed, what may we not hope with the people each year growing more and more enlightened as to these things, and state after state taking up the fight and establishing institutions where their consumptive poor may go for help and for instruction regarding those things which mean so much to them, so much to their friends, and so much to the world?

Naturally the great argument which legislatures oppose to appropriations for sanatoria is that of expense. Fortunately for us of Vermont, one of her large-hearted sons has rolled away the stone which has hitherto barred the portals of hope for the poor consumptive, but much yet remains to be done.

Will it pay? Let us examine the economics of the question. The sentimental and humanitarian aspects of the case no one questions, but putting it upon a commercial basis, will it pay in money? The results of treatment in different sanatoria of our own country covering a period of eighteen years, are practically identical and show that of early cases from sixty to seventy-five per cent are cured, that is, the disease is entirely arrested so that with proper care the patient should recover health. Now ninety per cent of deaths from tuberculosis occur between fifteen and sixty years of age, just at the wage earning and productive period of life when the average man or woman is best able, not only to enjoy life, but to be of benefit to the community and the state. The average age at death of these victims is thirty-five years, at which time the natural "expectancy of life" is a little over thirty-one years—call it thirty. One hundred dollars per year is not a high estimate of the earning capacity of the average man or woman. We bury about 500 of our citizens each year from tuberculosis and allowing that we can reduce this death rate only *one half* (we believe that it can be abolished in time) it would mean a saving to the state of $750,000 per year.

The courts value a life at about $5,000. Suppose that we call it one half that sum and 250 lives would mean $625,000. Remember that this calculation is based upon loss of wages alone, and takes no note of the immense cost of sickness, care, nursing, and burial expense that would be saved.

Digitized by Google

Think of this and remember that this awful waste both of human life and material wealth is as needless as it is cruel, for ignoring entirely the question of whether or not we can *cure* the disease, we *know* that it can absolutely be prevented.

Neither are we to suppose that residence in Vermont affords any special immunity from this disease, for our death rate is a little above that of the country at large, which is 13.5 per every 10,000 of the population, while in this state it is a trifle over 14 per 10,000. With a sanatorium assured in the near future there is much to hope for, but this is no reason for inaction. As physicians, we need to learn ourselves and to teach our patrons the urgent need of early recognition of this insidious disease. Upon this very point depends our success in individual cases, and it is not too much to say that in the past, the great majority of cases when absolutely recognized as tuberculous, have been too far advanced for cure even with the environment of a sanatorium. These cases can be helped, made more comfortable, and life can be prolonged; and more important than all else, they can be instructed in sanitary matters so that they shall not continue to be a menace to others.

We must strive to teach the people that a sanatorium is not intended as a hospital, that its true function is educational, and that the cure of tuberculosis depends not upon drugs but upon a well-regulated, rigid routine of daily life under constant supervision, not for a few weeks but for months and possibly years, and that the duties which they owe to others in these matters are quite as important as those which they owe to themselves.

THE SANITARIUM.

BY D. D. GROUT, M. D.

It seems to me that this subject is important; it touches our lives and the lives of others we know and love; reaches out to future generations. I will only attempt in these few moments to speak upon two phases of this topic.

First, I would like to impress upon you for a moment—for I believe it is necessary—the importance, the vital importance that this is to you, to myself, and to all of us, and to insist that we should all be doing something to alleviate, in some small degree, this plague which has so long afflicted man.

In the second place, I would like to urge upon your attention the fact that we absolutely must have, in order to bring to a successful issue this campaign which we are waging and in which we are all interested, the aid of a state institution devoted to this particular purpose—the treatment of tuberculosis, in other words, we must have a state sanitarium.

Digitized by Google

It ought not to be necessary to urge one of these topics in an audience like this, but my experiences in the past two years have shown me that it is necessary. I think the majority of the members of the medical profession are broad-minded, and are always ready to branch out in any way that is to our interests, in a limited way; but the medical profession *is* conservative.

You know this open air treatment which we all of us advocate was advocated by an eminent authority two hundred and fifty years ago. It was believed in just as thoroughly then as it is to-day; yet it has taken all these years for the medical profession to realize it! An English physician advocated life in the open air, and exercise, particularly by riding. He says: "In a word, I have put very many to this exercise; and I can truly say I have missed cure in very few cases. . . . . It is in this way more certainly cured than many diseases: Long persisted in, according to the case of the patient, and length of the disease."

Yet, despite the eminent prestige of his great name, an eminent authority, and demonstration by actual trial, the medical profession, with its usual conservatism, for two centuries and a half placed its faith in drugs.

It is true that about 1840 another great Englishman revived this theory, and instituted an open air sanitarium; but even that did not impress the medical profession, until at last a great discovery was made. Since that time the progress made by the profession in this matter has been rapid and brilliant.

Now, as I said, this is important; but however important it may seem to you, however much you may believe in it, however much you may be in sympathy with this work, *you don't begin to realize the real importance and true significance to you and to the men and women of to-day.* None of us can. It touches at so many points and reaches out to so many things. It not only affects us, but it affects our children, and their children, to endless generations. It has always been the same; the demon of tuberculosis reaps an annual harvest of, it has been estimated, 150,000 human lives. What does 150,000 lives per year mean? This is no dramatic figure—it is by Dr. Osler. It means that to-day we hear in over 400 homes of our country lamentations: husbands for their wives, wives for their husbands, parents for their children. When we remember that this is a repetition of yesterday, and of every day in the year, and every year in the decade, you must admit that this subject is an important one.

Now, about a sanitarium. Why do we need a sanitarium? Well, for various reasons; one is that it is in deference to the universal trend of public opinion. It is usually safe to defer to public opinion when it becomes universal. Some one has said, "You can fool all the people some of the time, and some of the people all the time, but you can't fool all the people all the time." We can transpose that saying, and say that when all the people all the time demand a thing, it is pretty safe to do something. We want the sanitarium, ladies and gentleman, while it can benefit us, and if not us, our children, or someone in whom we are interested. There are

Digitized by Google

a few people, I will admit, who don't believe that a sanitarium is necessary for any such purpose. It has been the rule, at least with me, when I find myself holding to an opinion which is utterly opposed to nine tenths of my fellow men, who are perhaps better qualified than I, is n't it just right that I should revise my opinion? Now, these few may be wrong and the nine others right. Is n't that reasonable?

In deference to the demand of public opinion we want this sanitarium, and in a short time. There are already ten states that have built large state institutions, or have taken the initial steps to obtain them.

Another thing. The open air treatment is now frankly accepted as the only form of treatment that offers any hope under heaven, that I know of, to the poor sufferer from tuberculosis. It has been accepted by everyone; but the open air treatment, to get the best and most successful results, cannot be administered in the average home. To-day, with the present lack of knowledge of tuberculosis matters possessed by the average family, the adequate carrying out of the open air treatment cannot be done; it cannot be taken in the average home adequately. It means the entire overturning of the beliefs and prejudices of a people, born with them, and it is no small thing, ladies and gentlemen, to overcome the accumulated prejudices of two thousand years, which have been drilled into us all these years and centuries! Nothing will illustrate this better than to look at the old method of treatment.

You know how persistently it was insisted upon that a person with weak lungs should be shielded from cold and draughts; that consumptive patients were kept in the house, hot and close, and sheltered from the only thing that could give them hope—the pure air and the sunshine. To-day, we do not believe these things.

Dr. Frank Hills of the state institution of New Hampshire has written an article on tuberculosis, and one paragraph of it expresses my view of it. He says:—

"The open air treatment of tuberculosis is the established fact. . . . . It does n't mean, however, that a patient is to be restored by a few weeks' sojourn in a fashionable resort. . . . . It means rather a systematic and regular life. It means constant watchfulness."

Digitized by Google

VERMONT SOCIETY OF TUBERCULOSIS

The second annual meeting of the Vermont Society for the Prevention of Tuberculosis was held Wednesday evening, June 21, 1905. The meeting was called to order by Dr. Don D. Grout of Waterbury, vice president. Sixty were present. In the absence of Dr. Lewis, secretary of the association, H. L. Stillson was elected secretary *pro tem.* H. L. Stillson, as treasurer, reported $9.00 received and disbursed. This was accepted and adopted. Dr. Holton called on A. M. Wilson of Boston, who gave an account of the work done in that city. Mr. Wilson then addressed the society as follows:—

This is an unexpected honor. About two years ago, some public spirited men and women, many of them physicians, got together and organized a society which they called the Boston Association for the Relief and Control of Tuberculosis. That society at once secured a secretary and undertook to ascertain the conditions with regard to tuberculosis in Boston. The conditions are notably bad in Boston, and there is a very high death rate from this disease; higher even than in New York City. Quickly they saw that they must do something more than the work of investigation through a paid secretary; that there was need of direct educational work, and so they secured a woman to act as a visitor among the consumptive poor of the city. The board of health is quite efficient, but moves slowly; is conservative as well as efficient, and while it does give a certain amount of instruction to consumptives reported to it, the society thought it was not quite enough, so the services of a trained visitor were secured. This visitor sees, in the course of a month, about sixty new cases of tuberculosis, and instructs the patient and the family as to the proper precautions to take to prevent the infection of others. Paper handkerchiefs and sputum cups are supplied and their use explained, and in case of poverty steps are taken to attend to the patient, and if need be he is sent to a private hospital or to one of the public institutions. Lately we have added another visitor, who undertakes to secure employment for discharged cases from the sanatoria. Patients are constantly coming back to Boston who were engaged in unhealthful indoor occupation before their health broke down and they were sent to the sanatorium, who would certainly suffer a recurrence of the disease if they should return to their old occupations. For instance there comes back to us from the state sanatorium a tailor. His whole life has been spent in that work, and he is unfitted for other work, yet if he returns to his shop the time and money spent in curing him will be wasted. We make every effort to place these men in the country, if possible, and have succeeded in placing a good many on farms about Massachusetts and in New Hampshire. They are perfectly safe people to have about, after the training of the institution. It is somewhat amusing the way some of them revolutionize the life of those with whom they go to stay. There was one enthusiastic fellow, who when he came back to Boston slept out on the roof of his tenement.

Digitized by Google

He did this regardless of the weather through all of last winter. We got him a place this spring in a garden in Concord, Mass., and he is now sleeping in an unused chicken coop from which he has removed the windows. He gets up in the morning, takes a cold plunge, and walks a quarter of a mile for his breakfast. Although in this case the disease has never been arrested, yet the fellow is able to support himself and to contribute toward the support of his family. We have helped a number out in this way.

The society has also done considerable work in the way of educating the people in general as to how to keep from getting the disease. In the first year about seventy-five lectures on the prevention of tuberculosis were given to audiences ranging from small groups of twenty to large gatherings of even 500 people. Probably about 10,000 people were reached in this way in the year, and this work has been continued even more actively in the present year.

In Boston and New York, the laborers are almost universally members of labor unions, and attend meetings very faithfully. We got the officers of the central labor union interested, and through them got admission to the various local unions. We have given addresses before about one half the labor unions in the city. We usually get one of the younger physicians to address a labor union, talking about twenty or thirty minutes. I have been into such meetings, and after a thirty minute talk have been kept there answering questions of another half hour, so great is their interest in the subject. There is hardly a workingman in the state of Massachusetts who has not had some friend or acquaintance who has been treated at the state sanatorium. We have about 325 patients in the state sanatorium. They remain in the institution an average of six months. That would make 650 graduating in the year, and their influence has reached practically all the people in the state. At any gathering we address there will be two or three persons who have had friends in the sanatorium, and they are always ready to corroborate what we say of the treatment there. Some of the patients taken into the sanatorium cannot be cured, but the same story comes from all of them; of the better way men live there, of the outdoor life in the daytime and the open windows at night that is so large a part of the treatment, and I think the educational propaganda in Boston, and throughout Massachusetts, owes much to the influence of the hundreds of patients who have come back from the institution at Rutland. So that the story we tell them of keeping windows open is not new to them. We are preaching it on every occasion. We have sometimes held as many as three or four meetings in an evening, in different parts of the city, always giving out leaflets of instruction to be carried home. We got into the public schools a year ago and gave out 50,000 of these leaflets to the children of the grammar grades. Parents have read these leaflets, and have sent inquiries to us wanting to know where they could be treated for tuberculosis, and we have found many early cases in this way. In several instances that I can point out, men and women have got to the sanatorium through reading these leaflets.

Digitized by Google

The exhibit you see on the walls of this room is another of our educational measures. We first assembled this material for the Mechanics' fair last fall, and great numbers of people stopped to look at the exhibit, and to learn the lesson that is taught by these charts and pictures. Since then we have sent the exhibit to a dozen cities in New England, preaching the same gospel. To-day we are doing these things, that can be done anywhere.

We have no state society in Massachusetts. We have local societies in Boston, Cambridge, Worcester, and Springfield, and the movement is getting a foothold in various other communities.

I think the only state that has a very effective state organization is Maryland. Instead of a local society they have a state society, with its head office in Baltimore, with a paid secretary and other officers, and the people of Maryland are being awakened to the necessity of fighting the disease. They make extensive use of the press to stir up agitation among the people on the subject.

I think such a society would serve a great purpose here, with local branches throughout the state. You need not necessarily have a paid secretary, merely someone who could give considerable time and enthusiasm to the work. Some newspaper man would tell you how to gain access to the press of the state. Usually the newspaper in the small town receives most of its matter, except the local news, already set up and it would be a comparatively simple matter to arrange with the central press bureau to send out prepared articles on tuberculosis. Such a thing as that can best be done by an organization. It would certainly arouse great interest in the subject throughout the state. The local health officers could take the leaflets shown here, and distribute them through the schools in the state; primary, grammar, and high schools.

Mr. Bramly asked Mr. Wilson in regard to the visitor and the trained nurse: What do they do? What does their work consist of if they are not trained nurses?

The visitor from our society is not a trained nurse, although she is an intelligent woman, and by her reading and association with this particular work, probably knows as much about tuberculosis as would any trained nurse. It has been our aim not to duplicate any work already in existence, and there is in Boston a district nursing association with sixteen nurses in as many subdivisions of the city. When any case of tuberculosis is found at the various dispensaries, it is immediately referred to the district nurse, who visits the patient continuously to the end, instructing the patient and the family as to the precautions they should observe and supplying paper handkerchiefs and sputum cups. There is a great class of patients, however, who do not appear at the free clinics and who would resent the visit of the charity nurse in her uniform. It is to this class of patients that our visitor goes. Through various agencies our visitor learns of forty to sixty new cases a month. Many of them have been examined for the state sanatorium and rejected. To these she can give the instruction they need and since she sees them in their homes she can give them practical sugges-

Digitized by Google

tions for carrying out these instructions, which in all too many cases the private physician has failed to do. Other cases have proved acceptable cases for the sanatorium, but cannot go for lack of the four dollars a week that is charged there to all. Among these patients our visitor often develops unsuspected resources or refers to them to their church, lodge, or to some charity. In practically no instance since our society came into existence has a patient been kept out of the sanatorium solely because of lack of funds. Nor has it been necessary to start a special fund for this purpose; charitable societies already in existence nearly always have been found ready to pay the state charge for a favorable case.

Many cases, of course, are found by our visitor, who should be receiving the attention of the district nurse, and these are at once turned over to that agency.

Mr. Redfield Proctor, Jr., being called upon spoke as follows:—

I don't know exactly why the chairman expected me to be familiar with all the details of sanitarium life. I never was in a sanitarium as a patient, though I was in Saranac Lake as a patient eleven months, being away about two weeks during all that time. I was boarding in a boarding house in the village, but of course had a chance to see a little something of the life in the two or three institutions there.

I think perhaps a brief outline of the doings of the typical day might give you as good an idea as anything of the modes employed in most of the institutions.

Take, for example, the case of a patient who has to keep pretty still, but is able to be dressed every day. They get up somewhere about half past seven or eight o'clock in the morning, and begin the day with a cold bath, or a cold bath to the waist. I think the doctors advise a cold bath once a day, but a good many persons take a cold bath to the waist in the morning, and below the waist in the evening; then they have breakfast about eight o'clock. After breakfast all go out on the piazza and take their places there for the day's work, and to the majority of the patients in the condition that I take as an example, the day consists in keeping still—very still. They sit around or recline in comfortable chairs on the piazza all through the forenoon; about the middle of the forenoon, they have nourishment of some kind; milk or eggs, or in one institution they have bouillon, or some warm drink; then they have dinner at about one o'clock.

The afternoon is very similar to the forenoon; in fact, it consists in getting back onto the same piazza and taking your seat in the same chair, and having the same people on both sides of you, and talking about the same things. Supper is at night—seldom dinner—at about six o'clock. In the middle of the afternoon some nourishment is given, generally similar to what is taken in the forenoon.

In the evening some of the patients sit outdoors, and some of them do

Digitized by Google

not. If they sleep outdoors, I think that most of the doctors are willing to have them sit in the house through the evening. If they sleep in the house, then sitting out of doors is advised.

Of course all patients, practically speaking, who are able to sit up and be dressed every day, and sit out on the porch, would be able to walk a little, at some time during the day; probably a little in the forenoon and a little in the afternoon, but only under the direction of the physician. If they have any temperature, like 100°, they should be in bed; if they have not, they would be able to sit on the piazza. That practically covers the day, and if you extend that anywhere from six months to a year, I think that you would get quite familiar with it.

Patients who are in bed, of course, are put where they can get as much air as possible. In most hospitals, in the morning the nurse comes in and shuts the windows and lets on the heat, so that when the cold bath is taken, the water will not freeze on you before you can use the towel.

In some of the institutions, the bed patients are wheeled out on the piazza every day, each room having a wide outside door opening directly onto the piazza. At the Reception Hospital in Saranac Lake village, at the head of which is Dr. Baldwin, they have piazzas on the first and second floors, and wide doors in all the rooms, and the bed patients are wheeled out of doors every day. I think, with the exception of a couple of tents, that there are no provisions for sleeping outdoors.

At the Adirondack Sanitarium about fifty per cent of the patients sleep out of doors. A year ago last winter when the mercury registered more than fifty degrees below zero, there were a large number sleeping outdoors, every night. That may seem a little barbarous to us, but, bit by bit, one gets accustomed to the cold so that one doesn't mind it. I have never slept out when it was fifty degrees below, but I *have* slept out of doors with the temperature twenty degrees below zero, and I didn't take any cold. I remember freezing one ear twice in my sleep.

There are a number of devices here on exhibition for sleeping in the window, or with the head through it, that are undoubtedly good, but where a good porch or balcony is obtainable, I think—from what little practical experience I have had—that it is certainly more comfortable than sleeping with one's head stuck through a hole in the wall. I know of one doctor in Saranac Lake who got up a scheme of putting a box in the window, and the patient was supposed to stick his head out through that, and I expect that was very good; it is certainly very uncomfortable. I don't believe anyone who has tried both methods would say that they were any colder, or that the exposure prevented their sleeping just as well when on the porch. You can keep warm, and you are a good deal more comfortable, and it is a good deal more natural way to sleep.

As to the matter of exercise. At Saranac Lake very few of the doctors advise much exercise. Certainly patients do not exercise much, but if the patient has no fever and feels like walking, he walks a little, as I said before. I don't mean that they simply do nothing but sit still all the time;

Digitized by Google

they drive and ride when they are able, as it gets very monotonous sitting on the piazza, hour after hour, until you get accustomed to it.

But there are really a good many things you can do. I think it would strike you a little strange to see able-bodied looking men doing *Indian bead-work* or *sewing;* but you get to a state of mind where you must do something, anything, and this is not harmful, and you are not hurting anybody else. There are a number of things you can do, at little expense. But *keeping still is a big part of the programme;* it is not only big in duration, but big in importance.

The matter of diet has been somewhat exaggerated. These stories of eating of two or three dozen eggs, for instance, or six or eight quarts of milk a day, are probably all right, *on paper;* but I would much rather have them on paper than in my stomach. The patients are advised, where they can, to take considerable milk and more or less eggs, and to take any other kind of food with a great deal of nourishment in it. In other words, take all the nourishment your digestive organs can take care of, to give strength, and then by keeping still, keep that strength. They take a good deal of fresh meat and some vegetables, and leave the rich, hearty things out which have little in the way of nourishment. I think a good many people take a good deal more in the way of eggs and milk than I ever have. I have taken half a dozen eggs and three quarts of milk, as a steady diet, besides three hearty meals, and did n't feel any the worse for it; in fact, better. Although they keep perfectly still, a person will handle a large quantity of food; it would scare you to think of it, until you actually try staying outdoors and see how it helps digestion.

In the matter of exposure. I think oftentimes persons who have been used to indoor life, on taking the treatment would have to begin much slower, and would have to sit out in a more careful way, at first, than a person who has been used to outdoor life. Of course some people feel the cold more than others. By beginning a little carefully, even in winter, a person if he uses discretion in the matter of clothing, can certainly accustom himself to long periods of exposure to the cold, and long periods of sitting still, several hours out on the piazza, and not take cold or feel cold or uncomfortable, in the least. Most of the porches have wind-breaks, or glass windows, on some portions of the front, so as to cut off the wind; but it is very bad to build a piazza that is all shut in by glass, and then imagine you are out of doors. It is worse than sitting in a reasonably well ventilated room.

The matter of sleeping outdoors. I don't think many of the doctors at Saranac order that. I don't think they ever compel their patients to sleep out of doors; many advise it where discretion is used. They do favor it in a good many instances, but many, for one reason or another, probably do quite as well sleeping in a properly ventilated room.

Dr. Grout.

Give us your idea of a "properly ventilated room."

Digitized by Google

Answer.

I don't know that I can give a definition of a properly ventilated room. I think a room having a couple of windows, open at both top and bottom, and where a tuberculosis patient is sleeping, the windows certainly should be open at both top and bottom. If there are two windows, it is a great advantage to have them on opposite sides, and open both, ***but don't get into the direct draught.*** I slept, myself, for some time right between two windows, but I don't think that is a good plan. It is better to use a screen to shut off the draft.

I don't think an extreme low temperature is beneficial in a sleeping room; if you are sleeping out of doors, it is all right, but in a room where it is possible to have good circulation, I don't think there is any particular virtue. You may have heat, and have the windows open too. Of course the hot air coming in helps the ventilation, with the windows open. There is no need of having an extreme low temperature, ***but be sure that the air in the room changes frequently.***

Question.

How many sanitariums are there; different ones?

Answer.

There are three at Saranac Lake—one in the village and two just outside—a mile in different directions; one ten miles off, and another one fifteen or sixteen miles away.

Question.

What is the average number of patients accommodated in one?

Answer.

The two in Saranac—outside of the village—hold about 100 patients apiece; the one in the village holds about twenty. Stony Wold Sanitarium holds something like sixty-five.

Question.

How long since you left Saranac?

Answer.

Last December.

Question.

What is the population of Saranac?

Answer.

I think the population of the town is something over 3,000. I shall have to ask Dr. Baldwin.

Digitized by Google

Dr. Baldwin.

About 3,000, and with about 300 patients in the village. There are 300 patients outside of sanitariums. The total resident population would be about 3,000.

Mr. Proctor.

I have slept out of doors every night, with the exception of two, when I was broken out with german measles, here in Vermont this last winter. I have been out of the state twice, and have been obliged to sleep indoors. The rest of the life I cannot keep up. I work from eight to ten hours each day outdoors. The diet and the sleeping I do continue.

Question.

Then you slept outdoors more at home, than you did in the mountains?

Answer.

For a time I was boarding, and did n't have any place to sleep out of doors. I slept out of doors for three months at one time; the rest of the time I slept in a room with the windows removed, a corner room with windows in two directions. Part of the time I slept beside an outside door, part of the time I slept beside the windows and opposite the door, and it was as cold as out of doors.

Dr. Grout.

I think perhaps Dr. Baldwin might entertain us a little while about Saranac Lake. I have a curiosity to know something about the conditions, myself. One thing I would particularly like to know about. I was told by a drummer the other day that the conditions at Saranac were perfectly horrible; that there were consumptives in all the hotels and private houses, without supervision, hawking and spitting in all directions, and that it is a most disgusting place. Now, I would like a little information; I want to know whether it is a safe place to go to.

Dr. Baldwin.

I don't wish to go into any lengthy description of Saranac Lake. I didn't know that it was quite so bad a place as regards its sanitary condition. It is true we have consumptives, and some of them cough, and some of them expectorate; but we are doing our very best to make them expectorate in the right place. Those few people who do not are certainly a detriment to the community. As a matter of fact, there are a very few who are careless, and those of us who live there and have our families there are not so much alarmed as we ought to be, if these things were true. We should not be alive if they were true, and such exaggerated statements are unkind.

It *is* true that tuberculosis can be lived with, and safely, if things are properly conducted. I went there as a patient, myself, considerable before

Digitized by Google

Mr. Proctor, and I had a cough, with all the other symptoms, and some of them objectionable. The treatment of tuberculosis was less scientific then; if I may say it, it was somewhat "hit or miss"; less treatment of the patient, and more of the disease. Medicine had a place in tuberculosis, but it has lost first place, for now we are treating the patient instead of the disease, and with greater success.

But it should be impressed upon the people that tuberculosis is still a very serious disease. Any person who has tuberculosis must think that he *can* get well; but it is still a *very* serious disease in many cases, and was from the beginning, and there are none who know it so well as we doctors who are associated with it.

Now, if I may be permitted, I will change the subject from a personal to a more distinct topic for discussion in your meeting. I would like to say a few things, which have been suggested to me in the time I have been here listening to the remarks of the other gentlemen.

It is evident that you are getting up an interest in this city and in this state, about the prevention of this disease. I am very glad to see our patient, Mr. Proctor, take a personal interest in the crusade agains this disease, and it has occurred to me, as I think back—I am not so very old, though I have been interested in this work for twelve years—that the people who have done the most for the suppression of tuberculosis are those who have been themselves afflicted, or have lost daughter, son, husband, wife, or other dear one; and those are the people we want to get hold of. Don't expect the doctors to do it all. It is very easy to explain the indifference of doctors toward tuberculosis; it is because they do not realize that it is a curable disease; they think it is a hopeless disease, and nine cases out of ten *are* hopeless from the time they first see them. What is the use of the state, or anybody else being interested in an attempt to cure them? Is it not a natural sentiment among medical men?

But now we are getting the laymen interested in the matter, and have impressed upon them the fact that tuberculosis can be successfully treated, if they take it early, and the result is, that if they have been afflicted in their family, they will very easily be interested, and induced to coöperate to fight it.

If I were to make a suggestion, I would say: Make a list of all the people who have had their families touched. You will find some of them who will be absolutely immovable, and will not wish to hear anything about it, and you will find others who are ready to do something. Some of the best work we have in this line has been done by people who have recovered from the disease, and who have given their time and attention to helping other people who did not know how to prevent the disease.

We must look forward to a campaign of *prevention*, rather than *cure*. It was very well stated by the chairman, I think, this afternoon, that the number of cures is relatively small. The *prevention* of tuberculosis is of far more importance than its *cure*. If now and then a few of us recover, it is because we have the advantage of an early diagnosis, or of some for-

Digitized by Google

tunate condition, constitutional or otherwise, that gives us a chance to recover.

A great many of the people who have tuberculosis, appear vicious and reckless, and must be controlled; ignorance and indifference must be combatted, otherwise what protection can we have?

If I were going to take up the problem on that line, I would try to have the best people interested in it. We must get the encouragement of the legal fraternity; we want your names, we want some money; organize a society, and have a small membership fee to pay for printing and expenses of holding meetings—not too frequently; have a trained nurse or visitor (you will find, usually, poor people who will need the help, and you will find these poor people only through the public channels of information; the people of the better class have more facilities for being acquainted with and obtaining care for the disease). People who are never going away from home for their health will be cared for much better if more people are interested in your work. The poor will be helped by the association in a systematic way.

That the state sanitarium movement is an important part of this work has been well set forth. There is an important thing to note in all cases where state or municipal care has been in operation, and that is, *that tuberculosis is diminishing,* not only *apparently,* but it is *actually diminishing.* It is largely diminishing by means of the educational campaign carried on by such associations as this. In the state of Massachusetts, and in New York, it has diminished forty per cent. Now, that cannot be accounted for in any other way than because people have been taught to take care of the expectoration.

In regard to the practical methods of carrying out the objects of the society. It seems to me that nothing can be better than the line of work which Mr. Wilson describes as being carried on in Boston.

There is an idea prevalent among most people, that you must go a long distance from home to get proper treatment for tuberculosis. We know, however, that it is possible to *cure tuberculosis anywhere.* The state of Vermont has conditions favorable for the treatment of tuberculosis, and I will say this, that had I to live my life over again, and were to treat myself for tuberculosis, I would not ask for any better place than the state of Vermont. It has a cold climate, which is an essential thing to our mind at the present time. Coldness is not the direct cause of the cure, but the indirect, because stimulating nutrition, and I believe this element in climate is a very essential thing. In a hot climate it is very difficult to treat tuberculosis. You can have the benefit of these conditions, within a very short distance of the large towns here; and the purity of the water, together with the long cold winters, which we know are the best possible conditions, give the ideal surroundings for home treatment of tuberculosis, or treatment in a sanitarium. It is more difficult to treat a patient in his own home. Get him away from his family, if you can, and then send him back home and let him be a missionary.

Digitized by Google

Mr. Wilson mentioned some instances of the good effect of the educational work done by the sanitarium at Rutland, Mass. I may be pardoned for mentioning an instance I was reminded of when he spoke. Some five years ago there was a bank clerk sent to that sanitarium by the bank in which he was employed in Boston. He recovered and returned to the bank, and is there to-day, so far as I know. One of the directors of the bank who traveled around a great deal, and has business interests in the West, became very much impressed by the fact of this clerk's recovery. He was a layman, with no knowledge of the disease. He saw this young man go to Rutland, and come back well, and saw him stay well. This bank director had been educated on a great many subjects, but he knew nothing about tuberculosis; was as ignorant about it as any man on the street up to this time. Some time afterward he ran across a young man in his travels who had been ill; he heard him cough, and asked him about it. The young man said he thought there was something the matter with his lungs, but that the doctor had been treating him for bronchitis. The gentleman said, "I think you had better go to a specialist in that line," and sent him to a Chicago physician, at his own expense, who easily diagnosticated tuberculosis. He then took the young man with him to Saranac Lake to the sanitarium, and said, "I want him put into a sanitarium, instantly." He was accustomed to having things done right off. I explained to him that it was impossible for us to turn somebody out to make room for this young man; but we made temporary provision for him where he made rapid improvement, recovered, and is now back at his position.

Here is an instance of the educational side: The Rutland sanitarium cured one young man, and educated a whole bank. The director saw this young man in the West, and found he did n't have much attention; he had not only symptoms, but he had pretty marked signs in his face of tuberculosis, yet was caught in time.

Therefore, get the laymen interested in your state sanitarium. Dr. Osler in his opening address at Washington the other day said, "The public is awake and partly out of bed." I think the time is ripe for this movement; it ought to be possible to extinguish tuberculosis by just such movements as are going on here, even if we find something better.

Question.

I would like to ask one question. Has a physician who diagnoses a case of tuberculosis in the incipient stages, a right to withhold the fact of the disease from a patient?

Answer by Dr. Baldwin.

I think there can be no absolute rule in such cases as that. In other words, you must have first the knowledge of all the circumstances, and as a rule in nine cases out of ten, there is absolutely no excuse, and it is criminal to withhold the truth from the person who is most interested, in the early

Digitized by Google

stages of the disease. With a person who is fatally ill with it, there may be circumstances where we cannot see that it is wise to tell them of the existence of the disease, but a physician is doing the patient a kindness to make him understand the trouble, rather than to have some other physician tell him, and then have him go back to the original physician to express his mind. The responsibility is on the *first* physician, and there seems hardly any excuse for withholding the knowledge.

Dr. Grout.

Reference has been made by Mr. Proctor to Dr. Henry S. Goodall, superintendent of the Stony Wold Sanatorium at Lake Kushaqua in the Adirondacks. I am told that he is present. It would give great pleasure to look at him and to hear what he has to say, if he is present.

Dr. Goodall.

I came over here yesterday with the expectation of hearing other people talk, not with the expectation of talking myself; but there are two or three points upon which I would like to say a word.

First, the education of the people regarding tuberculosis. It seems to me that the time has now come when we should educate the people up to the fact that while the careless consumptive is a great menace, the careful one is entirely safe. In the mills in Bennington, my former home, there are a great many people at work, and if they become convinced that a man has consumption, they wish him to be sent away. Of course, if that man is careless, and expectorates onto the floors, or into the corners of the room, his fellow workers are liable to become infected, but if he will take proper care of his sputum his companions will be safe. It is this that we should teach the public. They cannot fear the disease too much, but they should learn not to fear the person who has it and takes proper care of his sputum. Many a person denies that he has tuberculosis, because he fears to lose his job, and expectorates promiscuously because he knows that to be careful about his sputum is to acknowledge that he has tuberculosis. In this way great harm is done. By providing suitable cuspidors in suitable places, about mills, stores, etc., to be used when any person has to expectorate, a long step will be taken towards stopping the contagion. Then, by educating the public to ostracise the careless spitter as being a source of contagion, and to allow the person who is careful to go on working undisturbed, as long as he is physically fit to work, the spread of the disease will be greatly checked, and many people will be able to go on earning a living, who in the present state of phthisiphobia, are compelled to stop work and become to a greater or less degree public charges. It is pretty hard for a person to be forced out of employment, who perhaps has a family to care for, when he might by using proper care go on working without any danger to his fellows. This hardship might be stopped, if the public could understand the true nature and limitations of the danger. In connection with the starting of a sanatorium, the history of Saranac Lake and of Rutland, Mass., should be of use if

Digitized by Google

opposition is met with from the residents of the section in which it is desired to build.

A report of the Rutland sanatorium shows that during the first six years the institution was in operation, the deaths from tuberculosis in that town had been—aside from people who had gone there with the disease—less than in any other period of six years, for eighteen to twenty-four years prior to the establishment of the sanatorium. The number of taxable polls in that village increased, and taxable property also increased largely. Of course the demand for skilled and unskilled labor also increased.

Saranac Lake has, as is well known, grown to be a large town from almost nothing, because of the reputation given it by the Adirondack Cottage Sanatorium of Dr. Trudeau.

The location of the sanatorium should be at a distance from any large town, but easily accessible by rail. If you are near large towns you will have much dust and smoke in the air; and there will be a great many temptations, especially to men, which should be withheld from them if possible. There is no large town within fifteen or twenty miles of our sanatorium, but the railroad passes within almost a stone's throw of our door.

In regard to the general design of a sanatorium I believe that the combination of a one-building institution and a number of tents and lean-tos would be the best. A central building for dining room, kitchen, administration offices, etc., with a dormitory on each end, would provide for patients who are not in very good condition, and the tents and lean-tos around it would provide for cases who could walk about more, and who were well enough to withstand the slightly greater exposure of housing in such structures. This would also provide for those who through nervousness, etc., might do better in smaller and quieter quarters than could be had in the large dormitories. Of course the number of people to be cared for would greatly influence the general arrangement. A sanatorium on such lines could be easily enlarged by adding lean-tos, tents or cottages, or additional dormitories.

Last winter we had so much pressure for places at our sanatorium that we were obliged to put two patients in a room. Some slept on the porch, and some in the rooms. We have better facilities for ventilating our rooms than in some buildings I have seen, the rooms being very large. Not only are there two large windows in each room, but over these windows are transoms of equal width, which go clear up to the ceiling of the room. There are also transoms opening into the hall, so that it is easy to pass the air right through the room. The only objection that I have seen to having two patients in a room is, that occasionally a person that has a bad cough annoys her roommate at night. This does not make any practical difficulty, as it is always easy to provide such a patient with a roommate who will sleep on the porch, so that the one who coughs has the room to herself at night. Furthermore, most people quickly learn to disregard the coughing of their roommates, and sleep as well as if alone.

Digitized by Google

In the Ray Brook Sanatorium they have as many as three patients sleeping in a room.

We have no washing facilities of any kind in the rooms, principally because of the extra expense entailed by providing them, and also because in winter so many accidents occur from water freezing in rooms, where the windows are open at night.

There are large bathrooms on each floor of the dormitories, where the patients perform their ablutions and take their shower baths.

After considerable discussion the society elected the following gentlemen as officers of the Vermont Society for the Study and Prevention of Tuberculosis:—

LIST OF OFFICERS NOMINATED FOR BOARD.

Dr. C. S. Caverly, Rutland,	President.
F. L. Greene, St. Albans,	Vice President.
Dr. C. W. Battell, Bennington,	Vice President.
Dr. W. R. Noyes, West Burke,	Vice President.
Redfield Proctor, Jr., Proctor,	Secretary.
Dr. W. L. Havens, Chester Depot,	Treasurer.

With power to fill up vacancies to complete the Organization.

DEATHS FROM TUBERCULOSIS IN THE CITIES AND LARGE VILLAGES OF VERMONT FOR THE YEAR 1904.

City.	Population in 1900.	1900.	1901.	1902.	1903.
Barre City	8,448	16	14	24	20
Bennington	8,033	7	9	10	12
Brattleboro	6,784	15	12	14	9
Burlington	18,640	34	38	26	31
Montpelier	6,266	13	16	8	10
Rockingham	5,809	7	7	16	7
Rutland City	14,000	16	25	19	20
St. Albans	6,239	12	11	11	9
St. Johnsbury	7,010	18	15	18	14

Total deaths in the state for the year 1904, 449.

Digitized by Google

QUARANTINE.

By B. H. Stone, M. D.

Quarantine is always something of a hardship. It is a sacrifice on the part of a few for the protection of the many, and has its legal basis in the police regulations of the state. A large part of our freedom from the plague of the olden time, which would affect three fourths of the entire population of cities and countries, is due to the strong work of the sanitarian in quarantining cases of cummunicable diseases. These are truths which all of us are willing to accept in the abstract, but in the concrete, when the full application demands a personal sacrifice, it is not always so easy to see the justice in the restriction. Especially is this true in a case of diphtheria. When a patient is obviously ill, it is not difficult to comprehend that he or she may be a menace to others, but in a case of diphtheria, the patient may be entirely free from objective or subjective symptoms within a few days, and still it may be necessary to maintain quarantine for weeks and in some cases even months. The reason for this is that serum therapy has shortened the quarantine course of this disease. Before the use of antitoxin, very few cases would have recovered in a space of two weeks. Now if the case is seen early enough, the disease can be brought to an abrupt end. Antitoxin produces this result by neutralizing and rendering inert the poisons produced by the bacteria. It unfortunately does not possess any germicidal action on these bacteria. The diphtheria bacillus will grow vigorously in commercial antitoxin, consequently the organisms will remain in the throat until they are killed and removed through the ordinary course of nature, which is comparatively slow. It is altogether probable that we can obtain a fairly accurate idea of how long the disease would have lasted without the use of antitoxin, by the length of time which the bacteria persist in the throat. These organisms, so long as they remain, although perfectly harmless for the individual rendered immune by antitoxin, are as much of a menace to others as they would be coming from the throat of a dangerously ill person, and in a way they are more important, for the patient without symptoms would not be confined to the room, whereas a patient suffering from an acute disease would not be out of the house. To prevent the spread of disease in this way, our State Board wisely requires the procuring of two negative cultures from the throat before quarantine is released. Usually these will be obtained within two weeks, but there are occasional cases in which the organisms persist for a much longer time. Cases are on record of a quarantine of nine months, made necessary by the persistence of the germs in the throat during this entire period. The quarantine period may usually be lessened very materially by the use of local antiseptics. Several things should be borne in mind during this treatment.

First. A non-irritable and normal mucous membrane has a greater reactive power than one which is continually irritated by the application of

Digitized by Google

strong antiseptics and by too frequent raking of its surface in the taking of cultures.

Second. That the diphtheria bacilli may lodge deep in the gland crypts or in the passages of the posterior nares, so that the superficial washing of the throat may not affect them.

Third. That the bacilli grow vigorously in a feebly acid menstruum, so that logically either a comparatively strong acid or alkaline solution would be advisable.

Fourth. No single antiseptic solution can be relied upon in all cases, and various agents should be tried if the organisms show a tendency to persist. Peroxide of hydrogen, lemon juice, silver nitrate solution, bichloride solution, alphozone, acetozone have all been used with success in some cases.

UNDER OUR PURE FOOD LAW THE FOLLOWING EXAMINATIONS OF MISCELLANEOUS ARTICLES HAVE BEEN MADE SINCE LAST REPORT.

Lab. No.	Brand.	Manufacturer.	Where Sold.	Remarks.
35192	Cream Soda	Standard Bottling Works, St. Johnsbury, Vt.	St. Johnsbury	Standard quality
35193	Lemon Soda	Standard Bottling Works, St. Johnsbury, Vt.	" "	" "
35194	Apple Cider	Standard Bottling Works, St Johnsbury, Vt.	" "	Illegal—contains salicylic acid.
35195	Root Beer	Standard Bottling Works, St. Johnsbury, Vt.	" "	Standard quality
35196	Blood Orange	Standard Bottling Works, St. Johnsbury, Vt.	" "	Illegal—colored with coal tar dye
35197	Strawberry Soda	Standard Bottling Works, St. Johnsbury, Vt.	" "	Illegal—colored with coal tar dye
35198	Standard Appetizer	Standard Bottling Works, St. Johnsbury, Vt.	" "	Standard quality
35199	Ginger Ale	Standard Bottling Works, St. Johnsbury, Vt.	" "	
35425	Mocha and Java Blend Coffee	Direct Coffee Co., Boston, Mass.	Bennington	Pure coffee
35543	Mustard	Citizens' Wholesale Supply Co., Columbus, Ohio	Rutland	Pure
35544	Cinnamon	Citizens' Wholesale Supply Co., Columbus, Ohio.	"	"
35545	Cloves	Citizens' Wholesale Supply Co., Columbus, Ohio.	"	"
35546	Black Pepper	Citizens' Wholesale Supply Co., Columbus, Ohio.	"	"
36958	Gluten Flour	.....	Burlington	Illegal—starch 7%

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

Volume VI. No. 2.

Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

TOWN CLERKS.

The attention of town clerks is called to the third paragraph of Section 2 of No. 140 of the laws of 1904, which is, viz.:—

"Town and city clerks shall semi-annually, in the months of February and August, transmit to the Secretary of the State Board of Health a certified copy of each birth, marriage and death certificate received by them during the six months last preceding the first days of January and July respectively of each year in which the copy is made, such copy to be upon blank forms furnished by the Secretary of the State Board of Health."

Also to Section 14 of the law relating to the returning of certificates, viz.:—

"If a town or city clerk fails to transmit to the Secretary of the State Board of Health the copy of the returns of births, marriages and deaths once in six months, as provided for in this act, he shall be fined not less than twenty dollars."

It is of very great importance that these returns be made

Digitized by Google

promptly in order that the Secretary may compile from them the usual tables and deductions. Also that he may make to the Census Office in Washington, D. C., the returns of vital statistics which they require. During this month you can make the transcript of the certificates filed in your office since July 1 last to the present time; then the first of January you will be able to compile them with but little delay. Do not fail to be prompt.

In the last Bulletin some conclusions of Professor Philip B. Hadley on the subject of evolution were stated. These were not necessarily his views, as he is a believer in evolution.

Tuberculosis Commission. The President, Dr. D. D. Grout, resigned to accept the position of Superintendent of the State Insane Hospital. Governor Bell appointed to fill the vacancy Dr. Henry D. Holton. At a meeting of the commission October 4, Dr. Holton was elected president of the commission.

Dr. D. E. Salmon, for twenty-one years head of the bureau of Animal Industry of the Department of Agriculture, handed his resignation to Secretary Wilson on September 6. The secretary accepted it, to take effect on October 1. Dr. Alonzo D. Melvin, assistant chief of the bureau, will be designated acting chief.

Marriage and Infectious Disease. A young woman in the state of Washington sued a man for a breach of promise of marriage. In his answer he confessed the promise, and averred that he would have married the woman had he not discovered, after it was made, that she had tuberculosis. The court held that, if tuberculosis is an infectious disease, transmissible from parent to offspring, it is against public policy that a person suffering from tuberculosis should be married, and that nobody should have to pay damages for breaking a promise to marry such a person. This is a case in which the state must be cruel to some individuals in order to be kind to the majority. In self-defense, it should prohibit such marriages.—*Everybody's Magazine.*

Indefinite Medical Terms Not Acceptable. Acting in accordance with the new state law passed by the last Legislature the Pottsville board of health will see to it that the law is enforced in its realm and that if any physician fails to abide by it he will be punished. This board of health has determined that no undertaker will be given a burial permit who holds a certificate of death with such terms as "heart disease," "accident," "kidney disease," "blood

Digitized by Google

poisoning," "breaking down," as causes of death. If such terms can be avoided and the definite cause of death be given statistics can then be compiled which will be of great value to the scientific medical man. This, however, is not the only advantage of the edict. It will insure an exact diagnosis from the physician who makes visit after visit without studying his cases sufficiently to give him the faintest clue to the nature of the disease present. As matters stand he finds it much easier to flatter the family and concoct some tale which will satisfy them.

NUMBER 116 OF THE LAWS OF 1902.

AN ACT CREATING A TUBERCULOSIS COMMISSION.

It is hereby enacted by the General Assembly of the State of Vermont:—

SECTION 1. The governor shall appoint in December, nineteen hundred and two, a state commission of five members, at least three of whom shall be legally qualified physicians, for the purpose of investigating the prevalence and extent of tuberculosis in Vermont, the need of a state sanitarium for consumptives, and such other matters pertaining to tuberculosis as may properly engage their attention in connection therewith.

SEC. 2. This commission shall meet at least once every three months, and each member shall receive a fee of three dollars for each day's attendance at such meetings and an allowance for such expenses as are actually incurred in the discharge of their duties, the same to be paid on the governor's order on proper presentation of statements.

SEC. 3. This commission shall serve until the next legislature and shall make a complete report thereto of the results of their investigations, together with such recommendations in regard to a state sanitarium for consumptives, its location, cost, etc., as they may deem advisable.

Digitized by Google

LOCAL HEALTH OFFICERS.

In making your biennial report under the provisions of Act No. 113, Laws of 1902, as amended in 1904, you will please follow the order prescribed in the blank form given below, answering each question as fully as possible, on separate sheets of paper if necessary.

Remember that the law requires this report during the month of *January, 1906.* Be explicit in your answers and as brief as possible and at the same time answer fully all questions.

1. Name and address of each member of your board.....

.....

.....

.....

2. How many meetings has the board had during the past two years?.....
3. Have changes or improvements been made in
   - *a.* Water supply?..... *b.* Sewerage system?.....
   - *c.* Schoolhouses?..... *d.* Other public buildings?.....
   - *e.* Slaughter houses?..... (Specify in detail on separate paper.)
4. How many nuisances have been abated by your board during the past two years?.....
   Give the character of each.....

.....

.....

5. Population of your town or city, estimated to date.....
   Number of births in 1904..... Number deaths in 1904.....
   Number of births in 1905..... Number deaths in 1905.....

Digitized by Google

6. Communicable diseases; number reported during 1904 and 1905.

	Number cases.	Number deaths.	Number outbreaks confined to first house.	
Small-pox				
Diphtheria and Croup				
Measles				
Scarlet fever				
Consumption				
Typhoid fever				
Whooping-cough				
Mumps				
Chicken-pox				
German measles				

7. Has there been any general vaccination of the people of your town during the past two years?.....
   If not, the date of last general vaccination?.....
8. Has there been any unusual outbreak of disease in your town during the biennial term?.....
   Describe fully, giving origin, number of cases and deaths and any facts bearing on its cause obtainable.....
.....

(Describe on separate sheet if necessary.)

9. Number of schoolhouses in your town used for school purposes?.....
   Give the sanitary arrangements of each, as to heating, lighting, ventilation and seating.....
   How many have janitors?.....
10. How many slaughter houses in your town?.....
    Have all complied with Sec. 27, Act No. 113, Laws of 1904?.....

Digitized by Google

11. Have any instances of food adulteration been called to your notice?.....

Have you inspected the stables or cows from which the milk supply of your town comes?.....

If so, give the results.....

12. Mention any other facts you can bearing on the sanitary condition of your town.....

.....

.....

13. Have you prosecuted any offenses against the public health acts of the state during the biennial term?.....

If so, give details.....

.....

14. What compensation have you received during the past two years?.....

.....

.....

The facts given in answer to the above questions will be tabulated and published in the Biennial Report. Anything of a distinctly personal nature will be omitted.

It is expected that you will send this report promptly, that it will be accurate and fuller than in previous years.

IN ADDITION.

Under authority of Section 10 of No. 113, Laws of 1902, as amended in 1904, you are directed to make an inspection of all "public buildings," as defined in Section 5 of same Act; this inspection to cover all sanitary conditions, including fire escapes, necessary for the public health and for the safety and security of individuals in such public buildings. The result of this inspection you will report upon a separate sheet. Make it full, so that such detailed information may be at hand as may be required to enable the State Board of Health to issue such orders or requirements as may be necessary to correct any existing defects.

By order of the State Board of Health.

HENRY D. HOLTON,
Secretary.

Digitized by Google

NUMBER 117, LAWS OF 1902.

AN ACT REQUIRING PHYSICIANS TO NOTIFY THE STATE BOARD OF HEALTH OF THE EXISTENCE OF ALL CASES OF HUMAN TUBERCULOSIS.

It is hereby enacted by the General Assembly of the State of Vermont:—

SECTION 1. Every physician engaged in the practice of medicine in the state of Vermont shall, immediately upon the passage of this act, submit to the secretary of the State Board of Health the names and addresses of all persons under his treatment for tuberculosis and thereafter each case within one week after applying for treatment.

SEC. 2. The secretary of State Board of Health shall keep a careful and accurate record of reported cases of tuberculosis, not for publication, but for such purposes as are necessary for the State Board of Health in the discharge of their duties, and immediately after being notified of each case shall send to the address given a printed circular containing proper information in regard to the disposal of sputum and such other facts, hygienic or otherwise, as are necessary for the welfare of the person afflicted and the protection of the community in which he lives.

SEC. 3. Failure on the part of a physician to conform to this act will constitute a misdemeanor punishable by a fine of not less than five nor more than fifty dollars or ten days' imprisonment or both.

NUMBER 70, LAWS OF 1902.

AN ACT TO PREVENT NUISANCES IN CARS AND RAILROAD STATIONS.

It is hereby enacted by the General Assembly of the State of Vermont:—

SECTION 1. If a person shall spit upon the floor or platform or upon the interior furnishings or furniture, except cuspidors, of any steam railroad passenger car or street railway car, in operation upon any railroad in this state, or upon the floor, furnishings, registers, or radiators of any railroad passenger station or public waiting room in this state, he shall be fined not more than ten dollars, to be recovered in a prosecution before any justice of the peace in the county where the offense is committed, provided, however, that no prosecution shall be commenced for such offense unless notice of the provisions of this act shall be posted in a conspicuous place in the cars, stations and waiting rooms of said corporations and suitable cuspidors furnished excepting in street railway cars.

Digitized by Google

614.0979
V26

Bulletin No. 3, Volume VI.

Issued Quarterly by

Vermont State Board of Health,

March 1, 1906.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS:

Notes on Cerebro-Spinal Meningitis, by Daniel Lewis, M. D., late Commissioner of Health of the State of New York.

Disinfectants, by F. C. Robinson, Consulting Chemist Maine State Board of Health.

Discussion on Disinfectants, by Mr. Edgar B. Moore of Rutland.

Health Officers, Their Duties and Responsibilities, by Henry D. Holton, A. M., M. D., Secretary Vermont State Board of Health.

Question Box.

Are Small Quantities of Preservatives Permissible?

Number 45, Laws of 1904. An Act Providing for the Better Care of the Health of Pupils in Public Schools.

News Items.

BRATTLEBORO, VT.

1906

Digitized by Google

Digitized by Google

NOTES ON CEREBRO-SPINAL MENINGITIS.

By Daniel Lewis, M. D., Late Commissioner of Health of the State of New York.

The country has just been passing through a newspaper epidemic of cerebro-spinal meningitis. By this expression it is not intended to depreciate the great value of the influence of the press in preventive medicine, and as purveyors of medical knowledge to the public. It is one of the most striking evidences of the dissemination of knowledge that the people now require and read all newspaper articles upon medical topics, the phraseology of which is sufficiently popularized for their understanding. We must to-day take our patients into our confidence, give them some explanation of the ætiology and pathology, and discuss the methods of treatment to an extent unknown twenty years ago. This desirable change can be almost wholly credited to the newspapers.

You, as health officers, will appreciate an example of how the newspaper man may often aid you by a little experience of my own at Richmond Hill, New York City.

A report was made at the office of the state department of health that worthless, crippled and superannuated horses were being slaughtered in a grove not far from Richmond Hill, and the meat prepared for market. The fact was verified by personal inspection, but no trace could be found of the actual owners of the establishment. The complaint and the facts of the case were given to a prominent evening paper in New York City, which published the account of their own reporter's experience in finding the slaughter house, together with a description of the animals waiting for slaughter, etc., and within a week all traces of the business had disappeared and it has never since been heard from. The somewhat tardy operation of legal process in such cases was thus rendered unnecessary, and the power of the press to regulate the conduct of law breakers was thoroughly demonstrated.

But press reports of epidemics are liable to be greatly exaggerated, and since early in January until about June 1 cerebro-spinal meningitis has been heralded as making most startling progress, mortality unprecedented, health authorities anxious but powerless, and physicians without any plan of treatment to offer, etc. Many of the contributions to medical journals have been colored by the same pessimism which the newspaper correspondents have offered to the public.

It is my purpose to open the discussion of this subject by a comparison of some actual statistical facts concerning this disease with popular ideas, supplementing the same from personal experience, and a brief discussion of the duties of the health official concerning its management.

We may assume that the figures given by Dr. Gallup of the epidemic in Vermont in 1812-13 are very nearly correct, although Dr. Caverly, in the last number of your bulletin, expresses a possible confusion of some other

Digitized by Google

affection with it in some cases. These figures of Dr. Gallup's give a record of 6,400 deaths out of a population of 217,915. In other words, in those two years thirty deaths occurred to every 1,000 inhabitants.

The figures for the great epidemic in Dublin in 1846-48 are not before me, but they were very large indeed.

From the latest information at hand, the death rate of Selicia during the present season is also in excess of any records in this country for the past generation.

All reporters agree that New York City and state have been the chief sufferers, and a study of the figures thus far bear out the statement with which we started, that it is largely a "newspaper epidemic."

Comparing the 1,200 deaths in New York City since January 1, 1905, in a population of 4,000,000, with Dr. Gallup's, it appears that it is only one one-hundredth of the rate in Vermont in 1812-1813. In other words, the deaths in New York City would have numbered 120,000 instead of 1,200.

In the Hudson Valley district, in the month of April this year, there occurred twenty deaths out of a population of 696,000; the Mohawk Valley district twelve deaths out of a population of 435,600. Four deaths occurred in Buffalo out of a population of 400,000; two in Rochester out of a population of 175,000; four in Syracuse out of a population of 120,000, while in the entire southern tier district, with a population of 435,000, only three deaths occurred.

If this record from the state of New York (outside of the city) be rated by Dr. Gallup's figures, we should have 67,830 deaths instead of the forty-five which have been reported.

When the death rate was at its height in New York City (it being at this time nearly normal), a computation showed the weekly rate to be one to each 40,000 of population, in no sense an alarming exhibit.

These figures are given as showing that no great excess of deaths thus far has resulted from this small epidemic. If, however, it is a preventable disease (as we all admit typhoid fever to be) and subject to control by faithfully executed sanitary precautions, even this small number of deaths *should have been prevented*, and the record is a stigma upon the fair fame of modern sanitation.

This brings us at once to the question of ætiology.

There seems to be little doubt that the exact cause is to be found in a germ which Weischselbaum, in 1887, isolated and described. This microbe is of the order to which the germ of pneumonia or inflammation of the lungs belongs. It is known as the diplococcus intracellularis on account of the fact that it occurs in the interior of white blood cells. But while the source of the ailment may be traced to this germ, yet another and larger question remains for solution. It is not sufficient for the determination of the cause of an ailment to note the discovery of a specific microbe which is to be found in the fluid of the brain and spinal cord. That which is the chief concern of bacteriologists and health authorities is the determination of the conditions under which the microbe gains admittance to the nervous

Digitized by Google

centers and works out its evil ways in such an environment. This last is really the crux of the matter. We may determine the fact that a special germ is invariably found in the case of a certain disease and therefore come to the reasonable conclusion that it is the direct cause of the ailment. What we desire to know further is the exact circumstance under which this microbe should be capable of gaining access to the body and of producing therein the dire effects characteristic of the disease.

At this point we are at once plunged into a dark vista of unsubstantiated surmises, and of all the recent contributions to this branch of the investigation not one of these speculations has been substantiated.

Even if we admit the alleged presence of the specific germ in the atmosphere at all times, that will not explain why there is often a decade or more between a recurrence of these epidemics. If filth, crowded dwellings, depressed vitality, bad air, improper food, are to be considered (and all these have been named by different authorities) as predisposing causes, why should there be these long intervals in the reappearance of epidemic cerebro-spinal meningitis? Certainly all the conditions above named are as constant as the condition of poverty.

Bacteriologists have been conducting experiments to show how the germ may be introduced into the cerebro-spinal fluid, and the nasal cavity has been thought to be the port of entry. I was recently informed by a careful investigator that all attempts to induct the disease through the nasal cavities have failed in his laboratory.

It was even more thoroughly tested by drilling directly into the cranial cavity with the idea that the micro-organism could be directly applied to the meningeal surface. No result followed this unusually severe test of the specific infection theory. It is evident that something beyond the mere introduction into the cerebro-spinal canal of the diplococcus intracellularis meningitis is essential to the production of the disease. While it is quite justifiable to attempt to prove the existence of a micro-organism for nearly all diseases, we are not yet ready to assert that all diseases are infectious. It is possible that this epidemic disease is mildly infectious, but if so it has not been absolutely demonstrated. We are told that the germ is very easily destroyed outside of the body, which is reassuring from the standpoint of those who believe in the theory.

Is the disease contagious?

I am ready to answer that question by an emphatic negative. It is not necessary for us to be skilled in bacteriology or pathology or microscopy to answer this question, which is purely a clinical one. The only writers or investigators who have given a reluctant adherence to the belief that the disease is mildly contagious have made the assertion with an evident mental reservation.

Professor Councilman has recently expressed himself as follows:—

"People can do nothing to avert the disease, though of course cleanliness is always a safeguard against any disease. It is not actively contagious. It is more common in the army among the troops than anywhere else, be-

Digitized by Google

cause you have there a large aggregation of men brought together who are of the susceptible age—that is, between fifteen and thirty years of age. Above thirty years old, the cases of cerebro-spinal meningitis are rare. It is a disease peculiar to children and young people. As to how it originated, it is more than I can answer. No man can tell. If contagious it is only mildly so."

Dr. David D. Brough, of the State Board of Health of Massachusetts, declares with Dr. Councilman that the disease is not contagious. He says: "It is not surprising to find a few deaths from cerebro-spinal meningitis at this time of year. The disease usually follows a hard winter, where there has been suffering from cold and lack of nourishment. It is found most frequently among children, and the mortality rate is very high—much higher than in smallpox. Although the disease is called 'spotted fever,' there are very few cases where the patients show spots. It is quite as apt to be discovered in houses where sanitary conditions are perfect as it is where they are not, and it has not been firmly established in the minds of physicians what causes it."

The editor of the *Lancet-Clinic*, in a recent resumé of the subject, says: "In regard to its contagiousness, we have every opinion from 'highly contagious' to 'non-contagious,' and from equally good authority. We cannot regard it as highly contagious on account of the rapidity and readiness with which the specific micro-organism succumbs outside the living body. That it is contagious to some degree, however, can be no longer doubted, and it is better to so regard it, for it is only by the prompt and efficient sanitary measures that the contagious diseases call forth that we can hope to stamp out this dangerous malady."

It is my belief that all boards of health which have declared it a quarantinable disease have done so with the mental reservation to which reference has been made. The one exception perhaps is the State Board of Health of Vermont, whose executive officer can always substantiate his position by some arguments.

My first personal experience was in the epidemic of 1872-73, which prevailed to an alarming extent along the southern tier of counties in the state of New York. I was then engaged in practice in Andover, Allegany county, and had, during a period of about one week, twenty-seven cases of epidemic cerebro-spinal meningitis. The first case to appear was on a farm four miles from the village, the patient a child two years of age, and any possible infection from other cases was out of the question. It was a very severe case and ended fatally in a few days. The second case was four miles from the first in another direction, also upon a farm, isolated, and had no connection whatever with any point where the disease was already present. The others came in such rapid succession and in such locations as to make any spread by contagion not only improbable but impossible.

At that time the Elmira Academy of Medicine made a careful study of the cases which had occurred in the cities and towns along the course of the Erie railway, and came to the conclusion that the disease was not con-

Digitized by Google

tagious. The public were then notified to this effect, and in all my cases there was no attempt made at isolation or disinfection, nor was any restriction placed upon the members of the family attending school or going about their usual avocations, and yet there were no two cases in any one family, and the experience in Andover was duplicated throughout the entire district where the disease prevailed that year.

During thirty years of active practice since 1872, I have had charge of many sporadic cases and have witnessed two mild epidemics similar to the present one, and have based all management of cases upon the non-contagious theory.

NOTES ON TREATMENT.

Dr. George L. Peabody presented a paper before the New York Academy of Medicine April 20, 1905, upon the use of diphtheria antitoxin injections for the treatment of epidemic cerebro-spinal meningitis.

Inasmuch as much prominence has been given to this empirical treatment of the disease since the outbreak of the present mild epidemic in this city, you will be interested in the conclusions reached by Dr. Peabody, based upon the experience with twenty-two cases. The diagnosis in these cases was verified, with one exception, by the finding of the meningoccus in the spinal fluid. They were all cases of clinically unmistakable cerebro-spinal meningitis. Most of them were under eighteen years of age and many of them were young children, a few of them have been twenty years old or older. In many instances the treatment was commenced early in the disease before marked anatomical changes had occurred. One case received its first injection of diphtheria antitoxin on the first day of the disease; five on the second day; six on the third day; four on the fourth day, and others on the fifth, sixth and later days. In all cases fluid was removed by tapping, the quantity varying in amount between two drams to an ounce as a rule. Of the twenty-two cases, four received the antitoxin only subcutaneously; seven received it at different times both subcutaneously and intraspinously, and eleven received it only intraspinously; in only one case did it seem to cause any unpleasant effect. The doses varied from 1,200 units to 15,000. Only two patients received but a single dose each. In all of the others it was repeated at least once and some received four, five and six doses.

Of the twenty-two, eleven have died, making a morality to date of fifty per cent. Seven of these eleven died before the sixth day of the disease. Of the eleven dead one received antitoxin on the first day of the disease, three on the second, two on the third, three on the fourth and only two later than the fourth day. Dr. Peabody very tersely closes his report in the following words:—

"Even now we cannot afford to dispense entirely with the empirical method in therapeutics; but its application by some of us this winter in the treatment of epidemic cerebro-spinal meningitis compels the mortifying acknowledgment that we have added only to the chaff accumulated by our predeces-

Digitized by Google

sors without contributing a single kernel of wheat to the store that we have inherited from them."

The experience of Dr. Peabody in Roosevelt Hospital coincides practically with the same methods of treatment practiced in most of the leading hospitals of New York, and some of their conclusions are based upon a larger number of cases than those reported by him. We never could even imagine why diphtheria antitoxin should be useful in the treatment of cerebro-spinal meningitis, and now that the scientific report of these experiments has been given to the Academy, it should, in our judgment, settle the question of its further employment in these cases in the negative.

Several fragmentary references have appeared in the various journals during the past two months, hinting at the treatment which was employed in the last important epidemic of the disease previous to this one, namely in 1872.

In the series of twenty-seven cases, to which I have already referred, four died and the other twenty-three completely recovered. The treatment in all cases was practically as follows: In the initial stage the patients' bodies were packed with hemlock twigs, rolled in flannel wrung out of hot water and kept hot, and with ice-cold applications kept constantly applied to the head; aconite and belladonna were the remedies used internally. When evidences of effusion in the cerebro-spinal tract appeared, these applications were dispensed with and bromide of potassium in large doses continued for several days thereafter; counter-irritation was then regularly applied over nearly the entire length of the spinal column, usually by inunctions of red oxide of mercury ointment, and continued at intervals until all evidence of effusion had disappeared. Iodide of potassium in moderate doses was regularly given and such general supporting treatment as the case demanded. I have always believed that any other method of packing the body would have been just as effectual as the hemlock; in fact, in some cases, the heating of bricks in the oven, wrapping them in a wet blanket and laying them in the bed by the patient, produced equally good results. The death rate in this series of cases was about the same as that reported in the various towns in the southern tier of New York State and the above plan of treatment was approved and advocated by the Elmira Academy of Medicine.

Dr. Brough of Boston (whom I have already quoted) has made the following statement concerning treatment:—

"In some cases quinine has been used quite freely, this having the property of reducing the formation of pus in the nerve centers on account of its action on the blood. It also prevents in a measure waste of the tissues of the body and conserves the vital force. Potassium iodide is used freely—about fifty grains a day in ten grain doses. This tends to absorb the exudations of inflamed serous membranes, such as the brain and nerve tissues. But some authorities claim this does little good in the acute stages of the disease. A little morphine is administered to relieve pain. The patient is kept packed in ice bags around the head and body above the waist line. Below this he is completely surrounded with hot water bags. The cold

Digitized by Google

drives the blood away from the region affected and the heat draws it to the lower part of the body. The whole effect is to impede the flow of blood to the inflamed parts.

The room is kept rather dark and a heavy bandage of gauze is kept over the patient's eyes, which are frequently affected. The bandage is kept moist and the eyes are bathed every hour in a solution of cocaine, borax and camphor water. Especial care is also given the nose and throat, a wash being used every two hours. Mention should be made of the plan of treatment by lumbar puncture, with which I have had no personal experience.

Lenhartz has had occasion to treat forty-five cases of epidemic cerebro-spinal meningitis during the last ten years. His experience has confirmed him more and more in the belief that systematic and repeated lumbar puncture has a decided and favorable effect on the disease. He gives several case reports in detail to show the marked benefit that followed the punctures. In the case of one young woman the punctures were repeated daily for six days and then twice more at longer intervals. The cerebro-spinal fluid was under pressure of 260 and 430 at the first two punctures, and fourteen and twenty-four c. c. of the fluid were allowed to escape. It was very turbid. The leucocytes numbered 22,000 once, but generally ranged from 15,000 to 19,000. He cites also a case illustrative of the group in which the punctures were first made late in the case to ward off threatening acute hydrocephalus. The aggravation of symptoms about the fortieth day suggested this complication and puncture showed a pressure of 490 and 320mm. After escape of twenty-five and thirty-seven c. c., the condition improved remarkably, but severe symptoms occurring two days later, the punctures were repeated morning and evening and again the next morning, after which the patient, a young man of twenty-one, was able to sit up for an hour. This was the sixty-seventh day of his illness, and complete recovery soon followed. No ill effects were observed from the punctures in any instance; the technic is simple and easy, and can be applied by any one. He warns against allowing more than fifty per cent of the cerebro-spinal fluid to escape. The Weichselbaum-Jager intracellular diplococcus was found in forty out of his forty-five cases.

Enough has been said to open a broad field of discussion by this conference. The writer also hopes for a broad field of independent thought on the part of each one of the health officers present.

The views I personally entertain may be summarized as follows:—

1. The present epidemic is a mild one, the number of fatal cases being very small compared to the population.

2. The Weichselbaum germ has not been sufficiently studied to make reliable deductions from such investigations.

3. The disease is not in the least degree contagious.

4. Health authorities should frankly assure the public of its non-contagiousness and that there is no method known whereby the disease may be avoided.

Digitized by Google

Discussion by Dr. A. O. J. Kelley, Philadelphia.

He called attention to the clinical features of the diseases; described the pathological lesions; spoke of the great importance from a diagnostic point of view of lumbar puncture, recommending its employment in all cases, and especially in cases of doubt. In these cases it facilitated the diagnosis and rendered obvious certain public health measures. He believed it advisable to isolate all cases of cerebro-spinal meningitis; not always because the disease is especially contagious in the ordinary sense of the word, but because it is contagious to some extent; because we do not know the means of dissemination of the contagium and because it is worth while to restrict all contagious foci.

Discussion by Dr. A. C. Abbott.

I am a great deal disappointed with Dr. Lewis's paper. A few minutes before we came into this room he told me that he was going to express views on the subject of spinal meningitis with which he knew I would not agree—so that I looked forward to the pleasure of crossing swords with him in a friendly debate. I find, however, that his views and my own are fundamentally so much in agreement that I can do little more than say ditto.

In Philadelphia, as in some other places in this country, we have had a newspaper epidemic of cerebro-spinal meningitis. I took occasion, after things had got pretty well worked up, to look over our records, and found the total number of cases reported between September, 1904, and April, 1905, has been comparatively small. A total of seventy cases has been reported since last September; and by investigating those seventy cases, I found in the neighborhood of fifty cases that were probably true cerebro-spinal meningitis of the epidemic type. I also found that there was no regularity in the distribution of cases throughout the city. The first case occurred in the northeastern part of the city, the next, miles away in the western, and no recurrence of cases immediately about those localities.

Of the fifty cases that were reported, there were only two instances in which there was more than one case in the same house. In two houses the cases were reported simultaneously; in one there was an interval of three days and in the other six days between the dates of the report: so that in the fourth instance, only, is there much likelihood of there having been a transmission from the first to the second case. Consequently, you will agree with me that we have not had a serious outbreak in Philadelphia, and no convincing evidence that the disease is contagious in the ordinary sense of the word.

Why do we treat this disease as contagious?

In 1895 the state Legislature passed a law, defining precisely what was to be done with certain specific diseases, and among the diseases, cerebro-spinal meningitis was specified: so we are legally bound to look upon it as conta-

Digitized by Google

gious; we have to treat it with the same seriousness as other diseases in the list. We are directed to placard the house, and we do so. We are not directed to remŏve the patients to hospitals or pesthouses, and we do not do it.

I think Dr. Lewis a little unfair in his comments upon the bacteriological work on this disease. The bacteriologist in his work on spinal meningitis, as upon other disease, finds therein certain pathological changes, as well as certain micro-organisms: this combination he fails to find in other clinical conditions. He suspects the anatomical alterations to be excited by the organism found, but he does not state, nor does he believe that the micro-organism alone is capable of lighting up the disease in all persons, and under all conditions. The soil must be suitable to the seed, *i. e.*, the person must be susceptible, either by nature or made so by some depressing influence that lessens his resistance to infection. It is true, the germ of epidemic cerebro-spinal meningitis has been found in normal individuals. The germ of diphtheria has also been found in the throats of perfectly well persons, the parasite apparently doing them no harm; but let some depressing influence arise—let some epidemilogical factor appear that depresses the person or large numbers of persons at the same time, then you will find that conditions are changed. This is the explanation, not only of the explosive outbreaks of epidemic cerebro-spinal meningitis, but of labar, pneumonia and diphtheria, as well.

In the case of epidemic cerebro-spinal meningitis, it must be remembered that the bacteriologist cannot fulfil all the postulates necessary to establish the causal relation between the disease and the organism associated with it. He cannot reproduce the disease in animals by the injection of pure culture of the organism, for the reason that none of the animals thus far used for experiment are susceptible to this disease, either by nature or by inoculation.

I am very glad Dr. Lewis mentioned the treatment of this disease, especially that matter exploited some time ago concerning the use of diphtheria antitoxin. I do not believe that argument has a single leg to stand upon; and I fail to find either in the original paper on the subject, in any of the testa of the treatment or in the experience of other competent observations, that the method of treatment is worthy of the least confidence.

I have given you, roughly, the cerebro-spinal meningitis situation in Philadelphia. I have my doubts about its transmissibility, but until we have more real knowledge of it, I think it wise to safeguard the public by taking such sensible measures as isolation, disinfection, and notification of the existence and location of the disease.

Dr. Caverly.

This subject is now open for special discussion. The gentlemen will be glad to answer questions.

Dr. Holton.

I want to say that since Christmas there have been reported to the State

Digitized by Google

Board of Health throughout the state thirteen cases of cerebro-spinal meningitis. Five other cases have been reported which I am not sure of.

Dr. Campbell.

After reading in the last bulletin the very excellent article of our president, and having him refer to Dr. Gallup, who was with us a little less than a hundred years ago, I took up Dr. Gallup's book on epidemics in Vermont, and there is so much in this on spotted fever, I will ask your patience while I read. Dr. Gallup says:—

(This is in his introduction.) "The summers of 1809 and '10 were uncommonly cold. Spotted fever prevailed, in some places, in 1809 and more frequently in 1810—particularly in Massachusetts, and in the winter of 1810-11, in Vermont," etc.

Now I wish for a moment, to refer to the history of the epidemics and cases.

"In A. D. 1505, it is represented as overspreading Europe. In 1828 spotted fever again invaded Europe, followed by the plague. And again in England and France in 1556. And in Spain in 1557, as mortal as the plague. Spotted fever in many places in 1564 . . . .

"The first notice of it in this country, which excited any alarm, was at Medfield, Massachusetts, in 1806. And again in Litchfield county in Connecticut, in April, 1807. It continued in Connecticut in different towns in 1808-09, etc. In the winter of 1809 it appeared at Worcester, in Massachusetts, and other towns in that state. . . . .

"It did not appear in the state of Vermont to excite any considerable attention, until the winter of 1810-11. It may be observed, however, that for some time previous to this, sporadic cases of fever often appeared, with unusual symptoms and much versatility of character. . . . .

"It continued in Vermont through the winter of 1810-11, until the first of June. A few cases through the summer; and in the winter of 1811-12, visited towns and neighborhoods principally *that had been exempted the winter before.* And since then has occasionally appeared in different places."

He mentions the fact that most of the cases occurred during the cold weather. Again, he mentions that he believes that spotted fever is a disease having the same cause, differing only in degree and seat from a class of diseases such as pneumonia, enteritis, etc, and I believe that our president, Dr. Councilman, of Boston, and other bacteriologists believe the same—whether they got it from Dr. Gallup or not, I don't know.

Regarding the treatment of the disease: He is very much in favor of warm baths; he is not in favor of stimulating with alcoholic preparations. He used in their place warm baths; hemlock blocks boiled and put around the patient. In place of the lumbar puncture, he advocates blood letting as a remedy.

"A case will now be stated. To show the reality of the disease, it will be first stated, that two lay dead in the house. One a young woman not my patient. The other a little boy about five years, to whom I was called early

Digitized by Google

the morning before. He was in great distress; sinking, and almost ready to expire. As emetics were extolled by some, in this situation, I was induced to give him, though reluctantly, a small dose of ipecacuanha, which I have ever since regretted. As he vomited he took a dose of laudanum. He died in about an hour and a half after I saw him. . . . ."

"The next morning another boy about eight years of age was taken, in very similar circumstances, at the same hour of waking. As the family expected nothing but sudden death, I felt at liberty to treat the case with freedom. The warm bath was ordered. Whilst this was preparing, observing his pulse to be very rapid and small, giving the sensation of a little sharpness; believing it must soon fail as did the other, I resolved to give vent to the blood without waiting a moment for the bath, wishing at the same time that this might be first used. He had extreme pain in his forehead, a crimson flush in his cheeks, a sublivid color under his eyes, flaccid veins, dry skin, with constant writhing, whilst held upon the knees of another person. About five ounces of blood were taken from his arm. He said immediately his head was easier, he sat more quietly. No sign of sinking attended this operation, as the strength of the heart was not yet prostrated.

"He was now immediately immersed in warm water; he expressed its being agreeable to him, although he had no cold chills. After remaining about ten minutes in the bath, he was laid into a warm bed, with billets of wood placed around him from boiling water. These were afterwards changed for dry substances. A free sweat was soon induced, and his pulse became more full and free with less frequency. In about five hours I was sent for in haste to see him, when I found the nurse had pressed the sweating too freely, and he was much oppressed with heat. The bed covering was loosened, cool air admitted into the room, when he was immediately relieved. Notwithstanding he was manifestly changed from the state of immediate depression, his case was considered desperate by all who saw him; but hope, gleaming from a distance, inspired me with confidence. I now resolved to spend more time with him; and the principal part of the following night was spent in attending to every symptom, particularly the pulse. He took but little medicine except light cordials, such as essence of peppermint, spirits of lavender, etc., with coffee, tea, etc., as he seemed to need them. His pulse grew more free and less frequent after the sweats had continued twelve hours; the sweats had been kept free but not large, with little more than common covering ever since his being relieved by loosening the clothes. . . . ."

Finally that case recovered.

He gives quite a number of such cases—showing that Dr. Gallup believed that the two diseases, pneumonia and spotted fever, came from the same cause, and also that he believed thoroughly in blood letting for them.

I think that his is one of the best—if not *the* best—descriptions of spotted fever in the early days of the nineteenth century. It is a fact that a most remarkable epidemic occurred in the vicinity of Rutland, Vermont, which was reported by Dr. Caverly in 1894, as acute anterior poliomyelitis, and we

Digitized by Google

claim that two epidemics, important in the history of medicine, were very thoroughly reported by two Vermonters.

Discussion closed by Dr. Lewis.

Mr. President:—I am highly gratified with the very considerate handling of the paper which I presented; the imperfections of which are more apparent to me than to the audience, I believe. We have wanted to bring before the school—and have succeeded in doing it—the fact which they all admit, as I understand it: that we have not yet reached the amount of knowledge on this subject which we ought to, and which we expect to reach; we believe that the bacteriologists and pathologists will finally solve and give us the benefit of their investigations; but we have not yet reached the knowledge of the subject under discussion which warrants us in drawing fixed conclusions in regard to several phases of the disease.

I want to say, about the case which I referred to of my own, which Dr. Kelley discussed some, that I did not write that out to-day and some things were omitted which should have been given. I said the first case was five miles from town. The diagnosis I think was absolutely correct. The next case was ten miles in another direction, and finally twelve in the village I believe within a week; so that clinically speaking there was no possibility of the transmision of that disease from one case to another. And, ever since that, in looking over the reports of possible transmission, I have been compelled to say that it was impossible for the cases to be transmitted. It is impossible to-day in most cases to trace any possible infection from one person to another.

The history of the Philadelphia cases points to the same direction; and yet, you cannot help believing that it *is an infectious disease.* But how is it carried? In what way does it find its way into the tissues of the brain? What are the conditions necessary for its development in its terrific form in severe cases?

We don't know, and we are waiting for the bacteriologists to tell us, and I am, in the meantime, obliged to rely for my opinions as to its management from public health standpoints, upon my clinical experience.

Just one word about the advisability of treating it as a quarantine disease. I think this is correct. When my health officers call me up and ask what shall we do with such cases, I say keep those who are well out of the room; see to it that others are not unnecessarily exposed. You must institute some degree of quarantine, if only to satisfy the public demand for it. And I suppose this is the real reason quarantining has been established; the public expect you to do something. If you don't do anything, you might miss doing what is necessary; no harm can be done. *At the same time I don't think it is at all necessary.*

Digitized by Google

DISINFECTANTS.

By F. C. Robinson, Consulting Chemist Maine State Board of Health.

Infection and Contagion.—It may seem a waste of time to define the word infection, but my experience in teaching has convinced me that one cannot begin too far back in giving instruction. Even those who have considerable knowledge of a subject like to hear over again the fundamentals of it, and those to whom it is new and who would understand it, ought to have it developed from the very foundation.

To disinfect is the opposite of infect, and to infect is literally to "make in," or, by usage, to cause a harmful substance to go into an individual, or more broadly, into a place or thing. Thus, not only a man, but a house or clothing or water or a soil may be infected. The word infection as now used is practically synonymous with contagion, although dictionaries still try to distinguish them. Contagion literally means harmful, disease-producing matter, coming by contact. It is a more definite word than infection. Increased knowledge has tended to bring the words together. It was once believed that certain well-known diseases were communicated by touch or contact with the sick man or his clothing or the things he had touched, while others were spread by some miasm or vapor. The former were called contagious, the latter infectious. But the more we know, the more it is apparent that the idea of miasms as disease producers is largely incorrect. There is in most, if not all, such cases, a touch of some kind. In many cases, this touch proves to be that of some lower animal, as rats in the case of plague, and mosquitoes in case of yellow fever and malaria. Infection is thus proving to be contagion and will doubtless more and more prove to be in the future.

All this has broadened to a like degree the matter of disinfection, and also made it more definite. We no longer light fires in the streets of a city where contagious disease is prevalent, in order to destroy the miasm, but select something which will kill the thing with the fatal touch, whether it be a naked germ, so to speak, or the same clothed with and carried by a rat or mosquito. Thus to destroy insects and vermin is now an important branch of disinfection, and undoubtedly the general use of the fly and mosquito screens for doors and windows is a most important step in preventive medicine. Thus, for our present purpose, it is not important to distinguish sharply between infection and contagion. Both represent conditions which must be reached frequently by disinfection.

Disinfection and Deodorisation.—But there are two other words frequently confounded which should be sharply separated. They are disinfection and deodorization. Disinfection, as has been said, is to destroy infection and prevent contagion. But somehow the idea is quite fixed in many minds that

Digitized by Google

infectious matter has an offensive odor; hence, anything which will destroy such odors has been, and still is, quite largely accepted as a disinfectant. How often do we hear the expression made by those who have visited some unclean locality, "Why, you could just smell the infection!" In some chronicles of great plagues, as that of London, mention is generally made of a peculiar prevalent odor everywhere detected, and attributed to the plague miasm. Of course, where deaths were so frequent and corpses not properly taken care of, there must have been odors, but neither plague bacillus nor the bacilli of other infectious diseases have characteristic odors.

It is a case of imagination due to the miasm idea, which locates the source of deadly miasms in unclean and foul-smelling places. The imagination has a powerful influence on the senses. To those who consider a lightning stroke as of infernal origin, the odor of ozone commonly perceived about such places is identified as a "smell of sulphur."

I do not wish to decry deodorants. They are proper and necessary, and health officers should know what they are and how to use them, but they are frequently not disinfectants at all, and their use may give an air of security which is false and misleading.

Infection and Filth.—The fact is, an infected place, like a dirty individual, may have a ravishing odor. I would not say one word which might be construed as tending to change the ideas generally prevalent among intelligent people as to the evils which follow from filthy surroundings. But the fact is that there is no scientific evidence that filth itself is the direct source of the infectious diseases which health officers are called upon most often to fight. Neither are bad odors such causes.

On the other hand, moist decaying matter exerts quite a disinfecting power. Very many of the disease-producing bacilli are soon destroyed if put into sewage; and all bacteriologists know that the best culture medium upon which to grow such bacilli is that which is clean and fresh and sweet. It is a basal fact that the human as well as the domestic animal flourishes best in clean surroundings. The reason that, when contagion gets into families living in unclean conditions, it generally stays longer and is more deadly, is due to the secondary rather than the primary action of filth. These secondary actions are lowered vitality, lack of care, and re-infection. Animal parasites, rats, mosquitoes, flies, fleas, etc., breed more abundantly in filthy places, and, as has been said, these are now seen to be of prime importance in the spread of many diseases. Thus when we hear the claim made that because filth does not produce the bacilli of infectious diseases therefore it is not necessary to destroy it around dwelling houses, we must give no heed to such a misleading statement. Upon health officers, concerning all filth, are put the same kind of commands as upon the children of Israel when they were about to enter the promised land. They were forbidden to make any compromise with the people living there by which any of them were to be spared. They must destroy them "root and branch," or named and unnamed woes would be upon them. And we are told that such woes did follow individual cases of disobedience to the divine command. But they followed

Digitized by Google

no more surely than trouble will to-day if health officers compromise with filth, and deodorize instead of disinfect and destroy it. Theories of just how its acts are more profitably discussed after abating the nuisance.

Room Disinfection—General Principles.—But this is a school of instruction and you want details of how to act, especially. I suppose the disinfection problems which come for solution most commonly are:—

First, room disinfection.

Second, books.

Third, that of persons.

Fourth, that of animal quarters, pens, etc.

As to the first, I imagine that, in spite of the "coming back" into favor of sulphur to a certain extent, formaldehyde solution is most generally used. Its great practical superiority to all other gases for the purpose is its general harmlessness to persons and things. But if I may judge other states by Maine, it is frequently used very inefficiently. It is hard to eradicate the old idea even among intelligent physicians that a strong smell of a disinfectant is a sure sign that enough has been used. It was for a long time believed by the medical profession that the odor of chloride of lime or carbolic acid has a sterilizing influence. Then again, I suppose that persons not physicians think of disinfectants as poisons, and knowing how small an amount of a poison is deadly, they think that only a small amount of a disinfectant is needed to poison the germs of disease. These things taken with the additional fact that, as a rule, no community or individual wants to pay adequately for the time and materials used in a thorough disinfection, conspire to limit the process to the smallest possible performance which will not cause dissatisfaction. Even conscientious men feel obliged at times to do things in a way they don't fully approve.

The fact is that no amount of simple fumigation with formaldehyde is adequate to disinfect in a great many cases. For it must be remembered that it is a surface disinfectant and does not penetrate deeply into clothing or other articles. It does not act to sterilize masses of sputum which have much thickness, and such masses are doubtless common.

In spite of laboratory experiments to the contrary, I do not believe it safe to use less than a pint of forty per cent solution of formaldehyde to 1,000 cubic feet of room space to get surface disinfection of sufficient completeness; and this accompanied by an atmosphere three fourths saturated with water vapor.

Even though laboratory experiments show that a less amount will sterilize cultures of all test objects, we must not forget two things, first, that house conditions are not laboratory conditions, and secondly, that chemical action depends upon the masses of the reacting substances as well as their nature; that is, that actions which may take place when small masses are used are not always identical with those when large masses are in question. This fact was again brought out in certain experiments made by a German who showed that a so-called "loop culture" of a test bacillus might be killed by a disinfectant of a certain strength, but when

Digitized by Google

a larger amount of the culture was put with the disinfectant, it was not sterilized. It is well in using disinfectants to use the same principle used by financiers in estimating profits or expenses. They calculate closely just what they will be and then allow a good margin against themselves for unforeseen circumstances.

Room Disinfection—Details.—I recommend in room disinfection a procedure about like this.

First, fumigate with as little previous disturbance of the articles in the room as possible, merely spreading them out so the gas will come to the outsides of them as fully as may be, and, of course, close all large openings from which the gas might rapidly escape.

Let the gas act from three to six hours, then open, remove bedding, clothing, carpets, rugs, and all articles which might conceal in their depths infected matter, and have them steamed, or, in absence of the power to do that, have them exposed to sunlight and air for some hours, and thoroughly swept and beaten. The previous fumigation has made it safe to remove them, for all surface germs are killed. Of course, one who beats or dusts such articles out of doors should do it in a place where and in a manner such that neither he nor others will get any infection which may possibly be present. This is more easily accomplished in the country than in the city. But every city should have a steam disinfector for the use of its health department. Then after carpets, etc., have been removed, floors should be sprinkled with an eight per cent formaldehyde solution (one of forty per cent with three of water), and other wood work wiped with the same. I never have known of a case of re-infection from a room so treated, and I have had many examples of it when not. Of course, there may be rooms so bare that there is little need of anything but the fumigation, but even of these, the floors and wood work should be treated as described. Of course, the question comes up, What is the need of fumigation if so much other work must be done? The obvious answer is that the gas reaches what the other processes cannot. There is a further advantage also in the washing and wiping, especially in case of the poor and ignorant. They connect cleanliness with disinfection, which is a very important thing to do. I repeat again that there is a very large amount of room disinfection as at present practiced, which acts psychologically if at all; that is, it calms the mind. The reason why re-infection is not more common from such work is probably either the law of chance, or that old principle, "the lame and lazy are always provided for."

How should this fumigation be done? In any way which will vaporize safely the requisite amount in the shortest time. The latter provision is of the greatest importance where an inhabited house is being treated, because it may be necessary for the family to use the rooms very soon. The methods in general use are, spraying the liquid upon sheets hung up in the room, or spraying it into the room directly, or vaporizing the liquid in some sort of boiler, or mixing it with lime or permanganate of potassium and using the heat of the chemical union to vaporize the rest of it.

Digitized by Google

The latter method has the great advantage of rapidity and undoubtedly shortens the time necessary for the gas to act. Experiments seem to show that by using the permanganate method, a room in favorable conditions may be opened at the end of three hours. Details of the process and its testing were recently published by the Maine State Board of Health and copies can be had for the asking. Briefly, it consists of setting a common "ten quart" pail in the room, adding crystals of potassium permanganate, and quickly withdrawing and closing the door. Six ounces of the crystals are used for one pint of forty per cent formaldehyde. The action is over in a few minutes, and the room filled quickly with the maximum quantity of the gas. There is no possible danger of fire. Common unslaked lime can be used instead of the permanganate, but several pounds of the lime are required and some lime does not act well in consequence of being more or less air-slaked.

If any kind of spraying is used, the spray must be very fine or the evaporation is very slow. The thing I wish only to insist upon is plenty of gas in a short time. I am not pushing any kind of apparatus.

I did not mention under general methods the vaporizing of solid or polymerized formaldehyde, because I have seen no apparatus for doing this which recognized the necessity of considerable water vapor in the room. And there is a necessary condition of this kind which the water present in the ordinary formaldehyde together with that present in the air of New England meets very well. But if the air is dry, water must be provided by boiling some away in the room or letting it evaporate from wet sheets or cloths. Of course, with this precaution, the vapor from enough solid formaldehyde is effective.

The original method of getting the formaldehyde was by forming it direct from wood alcohol in some form of "lamp." There is no objection to this method from the standpoint of disinfection when it fulfils the above conditions as to amount of gas and water.

I would urge upon all who do disinfecting to take all precautions as to themselves spreading infectious matter. They should wear special clothes, or, if possible, one garment fitting closely over their ordinary clothes. Such a precaution has the further value that it is an object lesson to those who observe the process.

As to Sulphur.—Could not sulphur be used instead of formaldehyde, burning it in the room?

That was the old method, and undoubtedly if at least three pounds of sulphur be burned in a close room of about 1,000 cubic feet capacity, and an equal weight of water evaporated, it is comparable with formaldehyde in its effect on disease germs. But it is a difficult and somewhat dangerous process and the fumes destroy or injure very many things present in living rooms. For bare business rooms and ships' holds, it is even preferable to formaldehyde, for it is more poisionous to vermin. Indeed it is much to be desired that something should be discovered as deadly to germs and safe to perishable stuff as formadlehyde, and as deadly to vermin as sulphur

Digitized by Google

fumes. Possibly there is something which can be mixed with formaldehyde so that they may act together and accomplish the desired result.

Schoolhouses and Churches.—The disinfection of large rooms like schoolhouses and churches is occasionally the problem for a health officer to solve. It is at first a difficult one for him because he apparently must use such a large amount of material that his apparatus will not supply it. But it should be remembered that infection is not in the air itself but on something, and generally near or on the floor; also that much longer time can be taken for the disinfectant to act. It is the floor, seats, and lower woodwork of such rooms which need the treatment, and the wiping of these with the disinfectant is the important thing. Where floors are not injured by wetting, they may be well sprinkled with formaldehyde Saturday morning, in the case of schoolrooms, and the room closed till Sunday night and efficient fumigation secured. The permanganate method is easily enlarged also to supply gas for fumigating very large rooms.

I believe, however, that schoolhouses ought to be disinfected occasionally even if no contagious disease has appeared among the scholars. In fact, I believe they can be and should be kept well disinfected, so to speak, all the time school is in session. This can be done, as I know by experience, with little trouble and expense. A solution of formaldehyde can be made by diluting the forty per cent, which has no disagreeable odor but will kill disease germs by long action upon them. Let the janitors of schoolhouses use such a solution to sprinkle floors before sweeping or to wet the sawdust used in collecting the dirt, and it will penetrate cracks and act upon the dust which contains bacteria and prevent their growth. Many diseases not commonly classed as infectious are really so and spread by germs floating from dust. Keep this dust disinfected by having this weak solution used often and see if the general health of the school as to "colds" is not improved.

Books.—As to the disinfection of books, I would say there is great need of it. More than is commonly thought, they furnish between their leaves ideal places for preservation of infectious matter. When closed, such matter is kept away from air and light, which are two of Nature's great disinfectants. The germs of consumption are specially liable to be thus collected and kept to menace future readers. This applies to public library as well as school books. Now, in the first place, I welcome any excuse for burning up the old dirty school books, and if possible infection can furnish an excuse for this, I would do it at once without wasting a disinfectant upon them. But many books are not of that class and should be treated in some way. I recommend having a box of sufficient size with a porous removable false bottom, set up a few inches from the real; under this put some absorbent, and then stand the books on end on the false bottom with leaves free as possible, pour in onto the absorbent, formaldehyde solution of full strength and shut the box. Let them thus stand over night or longer and disinfection is complete. It would be well to have all the school books of a town disinfected once a year at least.

Digitized by Google

Persons and Clothing.—As to the disinfection of persons, town health officers are not commonly called upon to do it, but clothing can be disinfected in a box as described for books, or by hanging in a small closet exposed to formaldehyde fumes evaporating from a shallow broad dish on the floor. The best disinfecting process for an individual is a good bath.

DISCUSSION ON DISINFECTANTS

BY MR. EDGAR B. MOORE OF RUTLAND.

Mr. Chairman, Ladies and Gentlemen:—

I hardly know what to say after listening to Professor Robinson, who has certainly covered the ground most thoroughly in regard to formaldehyde disinfection.

Perhaps a few words from my own experience during the past five years may be of some little value. During this time I have used formaldehyde exclusively as a disinfectant, by the advice of Doctor Caverly.

First, with the Mulford generator, which is certainly effective, as the solution of forty per cent formaldehyde is forced into the apartment in the form of superheated steam, which penetrates the cracks, crevices, surfaces, clothes and hangings to as great an extent as any method yet discovered. The main difficulty with that machine is the time required to evaporate the liquid and the ease with which it gets out of order. After it has been out of use for some time, you may get to a place where you are to disinfect, and find the pump out of order or some other thing, and after a few expressions which would n't be used in polite society you take the apparatus back and to the shop for investigation and possible repairs.

Next, I made a sprinkling apparatus out of a second-hand copper fire extinguisher. By attaching a common bicycle pump on the side and a small piece of rubber tubing with a nozzle filled with fine holes, I have a simple contrivance, inexpensive and easy to keep in repair. Then by hanging sheets through all the rooms of a house I can easily and quickly apply the formaldehyde to a whole house if necessary, and this works as well as any of the systems I have yet tried.

For a few months I have been using the permanganate of potash with formaldehyde, as recommended by Professor Robinson, and I like it very much; it seems to me to be as effective as either of the other methods. The only objection that I think of is that it requires two trips, so when the distance is great I use the sprinkler, although it requires the extra use of sheets. I agree with Professor Robinson that it is a question of quantity,

Digitized by Google

and the stronger the solution the better, but judgment should be used, for certainly some apartments need much more than others, on account of difference in cleanliness.

The physician could help the officer very much, if, when they are called to a case of contagious disease, they would have the carpets, hangings and cushions removed from the sick room. It is most discouraging to go into a room filled with all sorts of plunder; chenille portieres at all the doors, lace curtains and multitude of cushions, which of course seem very comfortable things for well people, but are entirely out of place in a sick room, and should all be removed. I know of but two physicians in our town who insist on those things being removed, Dr. Caverly being one. Unless those things are removed we cannot feel quite sure of complete disinfection.

If you leave a house giving instruction to open the windows and doors in from six to eight hours, and then to take up the carpets and take down portieres and other hangings and to thoroughly clean the rooms, the occupants think they are being put to a good deal of trouble which the disinfectant ought to take care of. So I think if the doctors would insist upon those things being removed some trouble would be saved.

I know of only one case where there was apparently re-infection and that was in a case of scarlet fever. There I used the Mulford generator. I thought the rooms were thoroughly fumigated, but in a short time, about three months, two more cases appeared in the same family and I was led to believe that my job had not been thoroughly done. The next time I had every thing taken out, paper taken off the walls, ceilings whitened, walls, finish and floors washed with a solution of bi-chloride, then repapered and painted, with the result that not another case has appeared, though occupied by families having small children, who had to be assured that the apartment was perfectly safe before they would move in.

Under the circumstances I don't think I ought to take any more of your time. Undoubtedly you all have some question ready to ask the Professor and I think the time would be better spent in getting out of him all we can, and for that reason I will close.

Mr. President and Gentlemen:—

In fumigation for the purpose of disinfection after contagious cases, we have adopted a plan for the liberation of formaldehyde gas recommended by the Maine State Board of Health. Their method consists of the use of permanganate potash and the forty per cent solution of formaldehyde. A tin vessel ten inches in diameter by eight inches in height, with a funnel shaped top addition about seven inches, serves the purpose very well and is not expensive, and can be made by any worker in tin. The flaring top is made detachable for convenience. Six and one half ounces of permanganate of potash to sixteen ounces of the formaldehyde solution has been found to be the best proportion. This is ample for from 1,000 to 1,500 cubic feet of space. Two or three pints of the formaldehyde solution may

Digitized by Google

be used at once in this vessel if needed. It is well to spread some newspapers on the floor, as with the first ebullition there may be a little slopping over. Ordinary coarse crystals of the permanganate is all that is required. This can be bought for about twenty-five cents a pound.

By this method the gas is liberated so rapidly that the ordinary closing of doors and windows is enough, so that caulking and pastings of cracks is saved. After four hours doors and windows can be opened and rooms aired out as rapidly as possible.

One great advantage of this method is the absolute removal of any danger from fire. If cold weather, it is an advantage to have the rooms to be fumigated well warmed. The penetration of the gas liberated in that way seems to be much greater than from the use of candles or other generating apparatus that we have tried. This is due to the very large volume in so short a time. In thirty seconds after pouring the solution on the permanganate, which should be evenly distributed over the bottom of the vessel, the operator will be obliged to get out or be suffocated.

HEALTH OFFICERS, THEIR DUTIES AND RESPONSIBILITIES.*

By Henry D. Holton, A. M., M. D.,
Secretary Vermont State Board of Health.

I fully appreciate the honor of addressing the Health Officers of New Hampshire.

It is a pleasure and an inspiration to look into the faces of men who are engaged in the highest, most philanthropic and divine work, that of preventing suffering and death. The public health is the most important subject to which you can give your attention. Upon the sanitary measures taken to promote the public health, depends the prosperity and development of the state in all its relations. The public health is the foundation on which repose the happiness of the people and the power of a country. The care of the public health is the first duty of a statesman.

A recent writer has said that speculation no longer plays a part in considering the nature and cause of communicable diseases. The mysteries in which they were clothed for centuries have given way before the relentless energy of modern investigation. Conjecture and theory have given way to established fact, and sanitation takes its place among the exact sciences. The list of preventable diseases is increasing. The earnestness and efficiency of health officers are necessary to the completion of this greatest of modern undertakings. The health officer is to-day the most important officer of the state or municipality.

*Read before the New Hampshire Health Officers' School.

Digitized by Google

The people of our towns and cities are demanding protection from all preventable diseases as well as nuisances, and the failure or neglect to provide this protection arouses the most violent criticism and denunciation of the authorities. In addition to this prevention of disease and the abatement of dangerous nuisances, a variety of collateral responsibilities have been developed which cannot be ignored; hence the health officer must be prepared to discharge a great variety of functions.

In answer to the demands for educated and trained sanitarians, this and other similar schools have been instituted to direct your attention to these duties and obligations and put you in possession of a few basic facts, with which, by subsequent study and reading, you may acquire some knowledge which will enable you to meet and discharge these duties and obligations. Should you desire to further inform yourselves you can take the course offered by the "Sanitation Correspondence School," now open in Philadelphia. However, if there is within this good state a member of any local board of health who has accepted and is holding his office with the remotest idea that he is to receive a generous financial compensation, he should at once resign. Any one who engages in sanitary work must be actuated by high and holy motives, love of his fellow men and philanthropic inspiration, for the arduous tasks awaiting him. His epitaph should be "he went about doing good." The sanitarian is in the truest sense a Christian philanthropist.

Having thus briefly considered the social position of the health officer, let us now consider more especially his duties. In this state your local boards are in many ways independent and free to act, especially as regards nuisances and other things injurious to the public health; you may secure a search warrant and in the day time enter any building or inclosure for the purpose of determining if a nuisance or anything injurious to the public health exists, and order it removed or yourselves cause it to be removed, having the same power as sheriffs to command assistance in removing any cause producing unhealthy conditions. In fact, anything, anywhere, whether offensive to the senses or not, if likely to prove injurious to the public health, you have the power to cause the removal and destruction of. To you is committed the purity of the water supplies of your respective towns. You may cause the water to be analyzed at your State Laboratory, and, with the approval of your State Board of Health, may prohibit its use, or even fill up a well if it is polluted. It is your duty to see that all schoolhouses, dwellings and tenements are kept clean and free from every source of danger to the public health. If necessary you may require the occupants to remove from the premises and you may proceed to clean the premises and put them in a sanitary condition.

In case a communicable disease appears in any of your towns you have the power to at once establish a quarantine, subsequently giving notice to the State Board of Health; you may also remove any persons infected with smallpox or other pestilential disease to a house provided for the treatment of such cases, and may make such regulations respecting such houses, and

Digitized by Google

for preventing unnecessary communication with such premises, as you may think proper. It is also your duty to enforce all regulations and ordinances of your State Board. You should be particularly vigilant in seeing that quarantine and all rules and regulations are observed.

These laws, which give you such powers and impose such responsibilities, have been enacted for the benefit of the whole people. The powers are greater than are conferred upon any one except it be the Czar of all the Russias. In order that these duties and responsibilities shall be carefully and properly performed, certain qualities and attainments should be possessed by the individual who is to execute them. He should be a man with cultivated powers of observation; should be, or should make himself, familiar with the natural conditions of his town; should know the soil, the water courses, the direction in which surface water usually finds its way into the streams; the sources of water supply, how they are cared for; should be alert to discover anything that arises, or is created by any person, that is likely to affect unfavorably the public health. He should be familiar with the principles of public and practical hygiene; should have a fair knowledge of bacteriology although not necessarily a laboratory man; should be a student of wide reading in all subjects which may in any way aid him in his work, especially such as relate to the causes of infectious diseases, their natural history, the best means of disinfection, and just how and when it is to be done. He should be prepared to give practical advice regarding the best means of sanitary construction of buildings, warming, ventilating, and sewage; should be able to advise as to sewage disposal, purification of water and sanitary plumbing, and should, in fact, not only possess knowledge upon all sanitary subjects, but should embrace every opportunity to inform the people upon all subjects pertaining to sanitary matters. He should be a practical man, possessed of good common sense and great tact. He may have the largest fund of scientific knowledge, but unless he is endowed with the last two natural gifts he is likely to prove a failure as a health officer.

Some men are so constituted that when they are invested with certain powers they cannot fail to show to all that they are conscious of their power, and in every action and word, those with whom they come in contact are made to feel that the slightest supposed infringement of any regulation will be met with the full penalty of the law. These are the persons who go round with a metaphoric chip on their shoulder looking for some one to knock it off. They are always looking for trouble and usually are accommodated with all they want. Under the circumstances they become overbearing and disagreeable when they should be courteous and kind. These latter qualities should always be combined, when he knows he is right, with firmness and a polite insistence that his requirements be complied with. While he has a right to hold his own personal opinion of men and things, officially he has not the right to publicly express it. If in some instance it is an open question whether or not he possesses this right, discretion would indicate that he should be silent. The public will soon come to recognize

Digitized by Google

that he is wise, discreet, just, careful of the feelings of others, tactful, fearless, yet firm for the right. Then they will confide in him, will always give him cordial support in his work. It would be well if the health officer should from time to time, either by public lecture or through the newspaper of his locality, instruct the public in the necessity and legality of sanitary measures, the importance of and relation of his work to vital statistics, the means necessary to be adopted to prevent the spread of communicable diseases, the quarantine required for this purpose, the methods of disinfecting, the necessity of pure air, water and food, the influence of heredity, environment, climate, exercise, sunlight and clothing upon individual health, the wisdom of a temperate and contented life, the duties, personal and social, to be observed by every person who desires to make a good, happy citizen.

One of the most important duties imposed upon the local health officer is the quarantine of communicable diseases. Every practicing physician is required to report to the local board any such disease coming under his observation. Many times the practitioner neglects for a time to give notification, and in this interval many persons may be exposed to the disease. Hence the health officer, while not always giving ear to town gossip, should take early measures to satisfy himself as to the fact of there being present in his community a communicable disease dangerous to the public health. If the attending physician has failed of his duty it will be your duty to see that he is subjected to the penalty of the law. However, your first duty will be to the public, in establishing a quarantine or isolation, not only of the patient, but of the family who have been exposed, the premises and all things by which the disease may be conveyed to others. Your quarantine should be a full one and you should see to it that it is strictly observed. By full quarantine I mean that no communication be allowed between persons within the quarantined premises and any other person whatever, except that articles of food and drink and such fuel and clothing be supplied as are necessary for the comfort and health of those persons under quarantine. Papers and letters they may be allowed to receive, all in such manner and under such regulations as the health officer may prescribe. No person shall leave the premises without a written order from the health officer. Many cases will occur when at first it seems a great hardship to enforce a strict or full quarantine. You must keep in mind that the citizen must conform to what is for the greatest good of the greatest number. If it is scarlet fever, and the bread winner has had the disease, he may be quarantined out, living for a period elsewhere, and thus be enabled to continue his daily vocation and to provide support for the family. The same may be true of other members of the household, who may, at some previous time, have had the disease. These could be disinfected and allowed to attend to their business, living, of course, at some other place. You will see that the quarantined family do not suffer for the want of the necessities of life, always with the understanding that they shall pay if of sufficient financial ability so to do; otherwise the town must assume this

Digitized by Google

expense. You should also see that the attending physician takes such precaution in entering and leaving the premises as will ensure his not being a source of infection by carrying the contagion. Dogs and cats must be as carefully prevented from going abroad and as thoroughly disinfected as any member of the family, before quarantine is raised.

Regarding persons who have been exposed to the disease, but who are not included in the quarantine of the premises, they should be subjected to such surveillance as the health officer may, under all the circumstances, think wise. In any event, they should be so guarded that in case they develop the disease they shall not communicate it to others. Never omit to notify in writing the librarian of your public library, or the teacher of the school which the pupil usually attends, when a case of communicable disease attacks a pupil; in the first instance, so that books shall not be received from the family until they have been disinfected, and second, that the teacher may be especially attentive to any indisposition of other pupils.

All this matter of quarantine is probably not new to you; however, as a duty pertaining to your office it is of great importance. It is one of those duties that affects so intimately the families that have to submit to it that it is essential that you should exercise this function of your office with all possible urbanity, never for a moment, however, letting your sympathy for those thus affected cause you to relax in the least the strictness of your work or forget the community that are depending upon you to protect them from the contagion, which by this act of quarantine you are attempting to do. The result of your quarantine, if it is properly instituted and rigidly enforced, will result in the protection which the public have a right to demand. Whether you make it a success or not, it will have its effect upon the social and commercial life of the community. Some one has said that "To enforce strict and impartial quarantine, without unduly antagonizing physicians or patient, calls for honesty of purpose, pluck and tact." Here is the test of an efficient health officer. Having instituted and maintained a quarantine in any case, the question arises, When shall it terminate? The answer to this important question will vary with the disease for which it was instituted. In my state we say in scarlatina, when desquamation is complete; in diphtheria when two cultures, taken twenty-four hours apart, show the absence of the Klibes-Loffler bacillus; in smallpox when full desquamation has taken place and the skin beneath the pustule has completely healed. The point having been reached when the case has terminated, by recovery or death, a new condition confronts the health officer, that of disinfecting the house, its contents and the people. How shall this be done so as to render all free from any of the contagium that may give rise to other cases? This is a duty that the health officer should never delegate to any one except in very exceptional cases, unless in cities large enough to employ a corps of fumigators. He should make himself familiar with the methods used and should attend to all the details to the end that the work shall be so thorough that it will be impossible that a focus of contagion shall be left. Whatever method is adopted, two or more rooms that have not

Digitized by Google

been occupied by the patient should be first disinfected; then the person to be disinfected should pass into one of these aseptic rooms, divest himself of his infected clothing, passing to the next room, where after a thorough bath and the use of the disinfectants, he can put on fresh, clean, aseptic clothing and pass to another room or to another house. Other rooms of the house should be prepared for the disinfection by closing all cracks, loose joints, about windows and doors, hanging the bed clothes and garments upon chairs, and everything so arranged that the gas to be generated may find as free access as possible to everything. It will be often found best to burn many things that cannot be fumigated.

What agent is best to use to accomplish the desired results? The fumes of burning sulphur (sulphurous acid gas) is efficacious, three pounds to 1,000 cubic feet of space, if mixed with a sufficient amount of moisture. This, however, destroys many things, or injures them to such an extent that other agents have been sought, which, while as effective as germicides, cause less damage to the furnishings of the room. Hydrocyanic acid is undoubtedly most efficient as a disinfectant; however, an agent so destructive to animal life that but to inhale its fumes means almost instant death, cannot be recommended for general use. At the present time formaldehyde gas is the most satisfactory and practical substance we have for this purpose, as with its efficiency as a germicide it is not injurious to any materials subjected to its influence. A great variety of apparatus has been devised to produce it; many are expensive, others unsatisfactory. Candles and various patented preparations are offered on the market, each claiming to be the cheapest and most efficient. However, in a series of experiments made at the Laboratory of Hygiene in Vermont it was found that, in almost every case, a very much larger quantity of these preparations was required to produce the desired effect than was advertised upon the packages. For a safe disinfection there should be used twenty-three and one half ounces of the forty per cent solution of formaldehyde, with one part of glycerine and forty parts of water to ten parts of the formaldehyde solution; this, disregarding the cost of the apparatus, will be about eighty-three cents per 1,000 cubic feet of space. The Chicago method of using this solution, in spraying sheets hung across the room, has proved efficacious, but is very trying to the eyes and air passages of the person doing the spraying; hence is not likely to be as thoroughly done. The more simple way used in St. Louis has much to recommend it. There is no complicated apparatus to get out of order, it is simple and comparatively cheap. A copper kettle resting on legs six inches long, of sufficient capacity to hold two or three gallons of hot water, with a lamp filled with steel wool, which will hold a quart of wood alcohol, is lighted and placed under the kettle on a tin plate; into the kettle of water is placed another small copper kettle, resting on legs, into which is placed for each 1,000 cubic feet of space, a pint of forty per cent solution of formalin, the doors are closed and not opened for six or eight hours.

The State Board of Health for Maine have, after considerable experimentation, devised apparently a reliable and cheap method of using for-

Digitized by Google

maldehyde as a disinfectant. Any tin vessel can be used. They have found that a tin dish, ten inches in diameter, eight inches high, wrapped with asbestos paper so as to retain the heat, with a funnel fitted to it which flares at an angle of fifty degrees and rises nine inches, is best. Six and one half ounces of potassium permanganate is put in this generator and a pint of formalin is poured upon it, and a hasty exit is made from the room. This is sufficient for disinfecting 1,000 cubic feet of space, and will cost only about forty or fifty cents. There is no apparatus to get out of order; there is no danger from fire. Personally, I have not tested this method, but shall do so and if it proves satisfactory, as seems probable, shall recommend it to our health officers.

In presenting to you some of the duties devolving upon the health officer, I trust that in all your official acts you will be actuated by the high and holy purposes that are the foundation of all sanitary work.

"As Life's unending column pours,
Two marshalled hosts are seen—
Two armies on the trampled shores
That Death flows black between.

"One marches to the drum-beat's roll,
The wide-mouthed clarion's bray,
And bears upon a crimson scroll,
'Our glory is to slay.'

"One moves in silence by the stream,
With sad, yet watchful eyes,
Calm as the patient planet's gleam
That walks the clouded skies.

"Along its front no sabres shine,
No blood-red pennons wave;
Its banners bear the single line,
'Our duty is to save.'"

QUESTION BOX.

The President, Dr. Caverly.

I think all of you have learned from the sessions we have been holding the last three or four days, that the health officer, the health official of any kind, cannot keep too close to the law, cannot be too familiar with the law, and with the practical interpretation of the law. The legal phases, the legal questions that are continually arising in connection with the administration of public health laws, are frequently very embarrassing to the health officer, and I know from past experience that, with these questions coming up, you come here, very largely, to get enlightenment on the subject of the laws. If this school is at all like its predecessors there are a great many of

Digitized by Google

you who have questions of this kind that you would like to have answered.

Mr. Webber of Rutland has very kindly, at the last moment, consented to fill in the vacancy in the program for this purpose. I think this explanation is due him, because it is only within two or three days that I found we were obliged to fill the place of the gentleman whom we thought we had for this time. Mr. Webber has had a number of questions handed in to him, and we would be very glad to hear from him now.

M. C. Webber, Rutland.

Gentlemen:—Your president informs me that people complain in the hall of not being able to hear very well. Now, such questions as I am able to answer of those that have been handed to me, I will answer loud enough for you all to hear; and if you don't get my voice, it is because I am not quite clear what answer to make!

Dr. Caverly stated to you that I am here to fill a vacancy, and he very kindly told me, at the last moment, that he would not expect me to prepare a paper; but he said he would be very glad if I should feel inclined to make any remarks or present any paper. Owing to my professional engagements I found it impossible to do much in regard to my part in the program until yesterday. After reflection, I made up my mind last night on arriving here, that it would be the quickest way, and I could probably deliver it more readily, if I put down what I have to say. I will therefore read what I have written, and after that I will answer such questions as have already been propounded. The president has suggested that many more questions might be proposed. I might say now, that I am satisfied that I already have enough to answer for this time!

Perhaps there is no intellectual effort easier than asking questions. Probably there is no intellectual effort greater than answering them, if the questions are difficult. The effort will vary with the difficulty of the question. It is the business of a lawyer both to ask and to answer questions. Most lawyers prefer to ask them. It is easy enough to ask a witness on the stand innumerable questions, provided one understands the rules of evidence as well as, or better than, the opposing lawyer; if he does not, with objections interposed, the lawyer may find the asking of questions a difficulty.

But this particular lawyer now before you must answer your questions; and he cannot object to them, even if not within his information to answer. If you should come to my office in Rutland and ask me an *easy* question, I should answer it immediately provided, of course, you laid down the usual fee. But if you asked me a difficult question, I should tell you that it required further thought, and probably some investigation of the authorities, and that I would look the matter up later and send you a written opinion. The fee for the written opinion would be higher.

But to-day I can't send you away, if your questions prove difficult to answer. I must do the best I can to solve them.

Digitized by Google

It is quite likely, if the questioner has formed an opinion already, that he may not accept my opinion. It may be that others will not. I might say to such persons, that should he put the same question to five other lawyers, he would find they did not agree. Therein lies the fruitful source of litigation; and I might add, the lawyer's income, as well! The final authority that settles the differences of opinion among lawyers, is the Supreme Court of the state. And I venture to say *they* do not always find it easy to agree among themselves, though they are able and accomplished jurists. Two of the eminent judges of our highest Court recently disagreed with their equally eminent associates, in denying the petition of Mary Rogers for a new trial.

I was pleased to read, recently, in an article read before the Bar Association of New York, the statement that the Supreme Bench of our state is one of the most satisfactory in the Union; and yet lawyers who have failed to get that Court to sustain their contentions, no doubt harbor in their minds the belief that the Court did not decide their case right!

In the light of such a determined opinion, I cannot hope that my answers given here to-day will receive unanimous assent and approval.

Now, I am a general practitioner of the law, and until a day or two I had only a very general conception of the public health laws of this state. Your president and secretary, and the greater number of the health officers present here, have been making a study of these laws for several years. In fact, you are specialists in this branch of the public law. Therefore, if I can give you any useful counsel, I shall be content. I cannot presume to know as much about the whole subject as you do. I have had only one case arising under these laws. It was a recent prosecution under the pure food law. The particular charge was, *selling immature veal.* I asked my client what his defence was. He replied that he admitted that he had sold immature veal, but he contended that he sent it outside the state; he did not know that it was to be used for food; that for all he knew it might be intended to use it for fertilizer! But when I ascertained that the veal was nicely dressed and shipped to a provision house, I told him that I doubted if he could satisfy a jury that he did not really know it was to be used for food. Under my advice he pleaded guilty.

I am on the program to conduct a "Question Box." On looking into the box I have not found many questions. On the whole, I think I am better satisfied than the colored minister, who on the return of the hat that has been passed among his brethren, found only a few coppers reposing there. Disappointment was his natural feeling. I am *not* disappointed.

In order to keep your attention from meditating further questions, I shall occupy a few minutes more in making some general observations with regard to the health laws, their nature, and the powers of the boards, state and local. These laws have their origin in necessity for the public welfare, and are authorized under the police powers of the state. In our system of government all power is supposed to reside in the people. By means of written constitutions and laws these powers are delegated to their agents.

Digitized by Google

Only such powers as are thus delegated can be rightfully exercised. The framers of our government were careful to provide safeguards of personal liberty and to prevent the inequal application of the laws. Under these carefully prescribed provisions, a strict and literal construction of the laws would have prevented much of our legislation in the interests of public health. But in the theory of the police powers, the courts have found a convenient and elastic principle which enables them to sustain these laws as constitutional. The police powers might well be described as the expansion tank of our constitutional system. The rigidity of the written law there finds opportunity to expand; and thus it enables the people to meet the necessity of the hour in making laws suitable to provide for the general welfare.

Have you ever paused to consider the remarkable powers delegated to the people—to the State and local Boards of Health? A bare recital of a few of these powers impresses one with their magnitude. The State Board has power to compel all public buildings to be provided with fire escapes and other appliances for preventing accidents and injuries to persons. It can quarantine towns and cities, close up highways, and prohibit railway trains from stopping in quarantined places. It can shut up schools and churches, and forbid public assemblies, when the public safety requires it. It can promulgate and enforce rules and regulations for the preservation of the public health.

The local boards of health have power to abate nuisances affecting the public health; to exercise proper and vigilant medical inspection and control of all persons and things in their respective towns or cities, to prevent the introduction of contagious diseases. They can remove from his home and family a patient afflicted with contagious disease, and place him in an isolation hospital; they can shut up infected houses and prevent the inmates from going out or coming in. They can compel a houseowner, under certain conditions, to have his drains and sewers connected with the public sewer, and to provide suitable plumbing.

Are these not remarkable powers? Is it to be wondered at that people sometimes think that their personal liberty is invaded, and their constitutional rights violated? But these laws are right and just and necessary; and on the whole they are supported by the people. So long as they are executed with a wise discretion, they will continue to meet their approval.

Now, in answering the questions, I will take up, first, some that were submitted to me just as I came in the door, a few minutes before I was called upon to answer. Of course these questions that I answer offhand, in this way, are answered without having had much time for reflection; but I will do the best I can with them.

Question.

If a town clerk issues a burial permit, or a permit to remove a body from a tomb or receiving vault in a cemetery for burial, when the health officer is at home and ready for business, has the health officer any duty in the premises? If so, what is his duty?

Digitized by Google

Answer.

It is provided in Number 140 Laws of 1904, Section 5, that "No dead body of a human being shall be buried, entombed or removed from any town or city, or otherwise disposed of, without a certificate of permission issued and signed, as hereinafter provided, by the health officer, *except*, that if the health officer is out of town, or there is no health officer accessible, such certificate may be issued and signed by the town or city clerk; if there is a deputy health officer, appointed as provided in Section 4 of this Act, for the convenience of the people of any portion of a town or city, such certificate may be issued and signed by such deputy health officer." So that, if the health officer is near at hand he is the only person under the law to issue a permit, and no burial shall take place without such permit or certificate; if such burial takes place it is an infraction of the law, and the proper course for the health officer to take would be to call it to the attention of the state's attorney.

Question.

When the health officer is not a physician, is he entitled to a physician's fee for quarantining, disinfecting, etc.?

Answer.

Section 21, Number 113, provides that for sanitary inspection, placarding, quarantining, disinfection, etc., the fee is the same as for ordinary professional services, unless he is employed for a stipulated salary. It cannot be that the courts would make any distinction between the fee paid to a physician and any health officer who is not a physician; so that I should think that a health officer, if he is not a physician, would get the same fee that is ordinarily charged for such services.

Question.

In some instances, the town authorities have absolutely refused to pay the bills of the health officer. What then?

Answer.

You have lawyers in your community. I don't see why the towns are not liable for the fees and services provided to be paid by the laws, and the only way to collect it would be to retain the lawyer. It would be a debt created under this particular statute, and I think it could be collected, the same as any other debt.

Dr. Holton.

There are certain towns that say to their health officers, "You must not go to the School of Health Officers." The law provides that every health officer who goes to this School shall be entitled to his expenses—railroad fare and hotel expenses—the same per day as the State Board, four dollars per day. The first selectman of a town will say, "Don't you go to that

Digitized by Google

School, unless you go at your own expense; we shan't pay you; it is none of your business, and the town is not amenable for it."

Answer.

I should make the same answer to that. The towns are liable, and such expenses can be recovered.

Question.

Would the selectmen be liable, under the law, for interfering with the duties of a health officer in the performance of his duties in quarantining his section?

Answer.

I don't think the law would make any distinction between a selectman and an ordinary individual in such a case. It is outside of his authority to interfere with the health officer in the performance of his duty.

Question.

In my case the selectmen did not propose to pay me the expenses incurred in attending the School of Health Officers because I did not have an itemized account. I simply said I had been to the School, and had incurred such and such expenses; but they did n't propose to pay me until they had something to authorize them to pay. They thought I should have a certificate of attendance, signed by Dr. Holton, the secretary.

Answer.

There seems to be no such requirement under the law. Of course, it is proper for the town officials to decline to pay until they have a voucher; if they were not satisfied, they might refuse to pay until satisfactory proof was furnished them.

Question.

Has a health officer any duty in the examination of schoolhouses and the reporting of their condition, except under the direction of the State Board of Health?

Answer.

The powers of the health officers are enumerated in Section 13, Act Number 113, Laws of 1902. That section provides that "The health officer shall make sanitary inspections whenever and wherever he has reason to suspect anything exists detrimental to the public health."

I think, clearly, under that section, that he could make inspection of schoolhouses. It would amount to nothing more than an inspection. He could enter any other building for the same purpose; but he has no power to close schools, except under the order of the State Board of Health. I think that section would give the power to make the investigation if circumstances required it, *where he had reason to suspect anything existed which would*

Digitized by Google

be detrimental to the public health. I don't know as I have fully answered the question.

Answer.

That appears to me to be the answer to it.

Mr. Webber.

The president calls my attention to Section 10, Number 113, Laws of 1902. That section provides that "The health officer of each town and city in the state shall make, under the direction of the State Board of Health, a sanitary survey of each schoolhouse and other buildings used for public purposes, and make report each year to the State Board of Health in the month of March, and to the board of aldermen of cities, and to each annual March meetings in towns."

Question.

If a person takes the body of a friend from a tomb or receiving vault and buries it in a cemetery, without a permit from the health officer, has the health officer any duty in the premises, and if so, what is it?

Answer.

If this is done without a permit, it is done contrary to the law, and there is a penalty attached to it; and it is the duty of the health officer to complain to the state's attorney, whose duty is would be to attend to the infringement of the law.

Question.

If a permit has been given for the interment of a body in a vault in the winter, is it necessary to get another in the spring, issued by the health officer? Is the first permit necessary for interment? It is a question in my mind whether the first is for interment or burial.

Answer.

I should say that if the first permit was for interment and not for burial, it would be necessary to get another certificate before burial of the body.

Question.

If a party owns, with another, a sewer, and fails to connect with it, can a local board of health oblige said party to connect therewith, thus preventing a nuisance—the same as though the sewer were owned by the town or city where such nuisance exists?

Answer.

It is provided in Number 113, Laws of 1902, Section 15, Sub-Division 4, that where there is a sewer in a public street, the owners of houses abutting on that street, may be compelled to connect with the sewer. But there is no expressed authority to go beyond that. I should say, this being a private

Digitized by Google

sewer, the act does not give authority to the board to compel a person to connect with it. But if it amounts to a nuisance the board has the right to abate it, under Sub-Division 1 of the same section.

Question.

Do the laws of Vermont prohibit the emptying of sewage into any stream, the waters of which are used by any town for drinking purposes?

Answer.

The answer to that is found in Number 115, Laws of 1902, Section 10, where it is provided that "No sewage, refuse, or polluted matter of such kind or amount as, either by itself or in connection with other matter, will corrupt or impair the quality of the water of any pond or stream used as a source of ice or water supply by a city, town, village, public institution, or water company, for domestic use, or render it injurious to health, shall be discharged into a stream, pond, or upon their banks."

Dr. Holton.

What the gentleman had in mind to ask is: What authority does the health officer or State Board of Health have where the water supply is polluted in that way?

Answer.

Section 1, Number 115, Laws of 1902, gives to the State Board general oversight and care of all waters, streams, ponds, etc., used by any cities, towns, and villages as a source of water supply, and of all springs, streams, and water courses tributary thereto. And Section 2 provides that the State Board of Health may make such rules and regulations to prevent the pollution of such waters, and to secure the sanitary protection of all such waters as are used as sources of water supply.

In regard to the method of abating such nuisances, Section 12 of same act provides that "The court of chancery, upon application of a mayor of a city, the selectmen of a town, the trustees or bailiffs of an incorporated village, the managing board or officer of a public institution, or a water or ice company interested, shall have jurisdiction in equity to enjoin the violation of the provisions of Section 10." This gives jurisdiction of the offence to the court of chancery. There does not seem to be any way of enforcing the regulations, except through the court of chancery.

Dr. Holton.

I think the intention of that question was something like this. We will suppose the case: There is a town down the river; there is another town six miles above that point, which pours its sewage into the stream, polluting the waters. The waters of this stream have been used by this first town for domestic purposes for a great many years, and the second town has turned its sewage into the stream for a long term of years. Now, have they

Digitized by Google

acquired rights to empty the sewage into that stream which the city down the river cannot prohibit? They have been doing it for a series of years. Would that give them any inherent rights—anything that cannot be dispossessed by the town?

Answer.

I think the true answer would be found in the very nature of the laws. I do not think any town or individual can gain a prescribed right to do anything to the injury of the public. The laws of prescriptive and adverse possession are ordinarily applied to the case of private property. Here is a case where the state comes in. The state has general control over matters relating to the health of the state. I should doubt very much whether any rights by prescription could be obtained in the supposed case by one town to the injury of the other town. I have answered this question without any mature reflection.

Question.

Can a man quarantined for any contagious disease collect his per diem from the town?

Answer.

I have concluded that what the gentleman had in mind to ask is: When a working man has been shut up by the health officers, and has lost his wages, can he collect them from the town?

Questioner.

Yes, that is the question.

Answer.

I should say surely he could not collect the amount.

Question.

A builds a house on property just outside of a railroad fence near a low piece of land. The railroad ditch is inadequate to drain the land, the water remaining all summer. The low land is not owned by the owner of the house. Does the local board of health have any authority in such a case?

Answer.

The only authority the local board of health has is under Sub-Division 113, Laws of 1902, to abate nuisances. Now, if that is a menace to public health, it is a nuisance which they have a right to abate.

Question.

The reason of the water being there is because of the railroad company's inadequate drain.

Answer.

Well, probably the quickest remedy for this would be to make an appli-

Digitized by Google

cation to the railroad commissioners, asking that a proper drain be put in to carry off the water.

Henry Tucker, Brattleboro.

Given a sewer connection with a public sewer, a flush closet that has to be flushed with a bucket, and water pipes of a private water company through the street on which the house is located, can the owner be compelled to put in the water supply that will give the closet proper flush?

Answer.

I think the answer to that question must be determined by whether it is a necessity, in order to prevent a nuisance, or an injury to the public health. If the individual was careful enough to see that the closet was properly flushed with a pail of water, there would be no authority there, because there would be no necessity if it is properly attended to. If it is necessary as a health protection, I should say the board of health did have authority to compel him to put in the water supply, and to connect with the water pipes, or some other water supply. In other words, I think that is within the scope of this Act No. 113, Laws of 1902, and implied in Sub-Division 4 of Section 15.

J. C. Breitling, M. D., Lunenburg.

In the case of the finding of a dead body where the suspicion of foul play exists, and where criminal prosecution may follow, has the health officer sole authority to order the removal of the body, without the permission of the selectmen, or of a justice of the peace?

Answer.

I do not find authority given to him in such a case. Section 9, Act Number 140, Laws of 1904, provides that "Whenever a person dies without medical attendance the head of the household where such death occurs, or the next of kin, shall immediately notify the health officer, if there be one, otherwise a member of the local board of health, where such death occurred, who shall after proper investigation, and if deemed necessary by him after an autopsy to determine the cause of the death, order a certificate of death." It is not clear that this provision applies at all to the case suggested. I think that comes within the Vermont Statutes, Section 4713, which provides that "If a selectman is informed that the dead body of a person, supposed to have died by casualty or violence, is found lying within the town, he may if the public good requires it, apply to a justice of the county, who shall inquire into the cause and manner of the death of such person." It is probably intended by the statute that the selectmen shall be present and take charge, where the case might come up under our criminal laws.

Question.

Can the health officer, under such circumstances, order the removal of the dead body, if forbidden by the justice of the peace?

Digitized by Google

Answer.

That question is substantially answered. I think that comes within the jurisdiction of the selectmen and the justice of the peace.

Question.

In the case of an autopsy on said body, either on his (the health officer's) order or the order of the selectmen and justice of the peace, are the fees regulated by Section 5388, Vermont Statutes, viz., a reasonable sum, not exceeding ten dollars?

Answer.

A reasonable sum, not exceeding ten dollars. That is the provision. Ten dollars is the limit—there is no other provision for fees.

Question.

The statutes provide in another section, where an autopsy is ordered by a judge of the Supreme Court, a fee not exceeding twenty-five dollars. Where two physicians perform an autopsy under the order of the selectmen and justice of the peace, in such a case as I have stated, can they legally collect more than the sum of ten dollars of the town or county court for their joint services?

Answer.

It is provided by Section 1984 of the Statutes, that a judge of the Supreme Court may order such an autopsy to be made on the petition of the state's attorney, in the preparation of a criminal case for trial, and fix the compensation, not to exceed twenty-five dollars: but when an autopsy is held in inquests on the dead before a justice of the peace, the fee is limited to ten dollars.

Question.

Is it a fact that the law provides that the selectmen shall notify the state's attorney, in the case of a dead body that had been found in the town, under circumstances suggesting foul play?

Answer.

I don't find that there is any expressed provision to that effect. It undoubtedly is their duty, and he is the proper prosecuting officer; he is the person to make the investigation; it should be called to his attention by the selectmen. The provision contained in Section 9, Number 140, Laws of 1904, covers cases where no physician attended—whenever a person dies without medical attendance. This is broad enough to cover all cases of accidental death where there was no attending physician, the law having in mind that body shall not be buried without a certificate of death. It is the duty of the head of the family or next of kin to notify the health officer, and if deemed necessary an autopsy should be made before a certificate of death should be

Digitized by Google

issued. No fee appears to be provided for in the act for an autopsy conducted under its provisions. Perhaps in that case, the physician could recover the ordinary professional fee for such services.

Dr. Holton.

When there are no circumstances which would lead to a suspicion of foul play, does it become the duty of the health officer to ascertain the cause of death, and perform an autopsy?

Answer.

It is his duty to make proper investigation, and if deemed necessary by him, to have an autopsy performed, before he can issue a certificate of death.

Question.

When there is no evidence of foul play, just a mere suspicion, if the selectmen refuse to have an autopsy performed, has the health officer a right to go ahead and have it performed?

Answer.

If he is not satisfied, he can do so before issuing a certificate of death.

Question.

It is provided that he shall give a certificate as to the cause of death. How shall he give a certificate until he knows what is the cause of death? I think such cases have occurred, and the selectmen have objected to and refused to have an autopsy, and the health officer made a guess as to the cause of death in his certificate.

Answer.

Well, in such cases, he could refuse to issue a certificate of death, so that they would have no authority to bury the body until he has performed it. The provision is that, after an autopsy to determine the cause of death if deemed necessary by him, he shall issue a death certificate.

Question.

There have been several instances that I have known of where the health officer has insisted, where the death was under unusual circumstances, upon an autopsy, contrary to the wishes of the family.

Answer.

I think that comes within the intent of the law, even if it was contrary to the wishes of the family. It would ordinarily be contrary to the wishes of the family.

Question.

Would that convey the idea that an autopsy was proper in all cases where death is unusual, before the issuing of a certificate?

Digitized by Google

Answer.

It leaves it a matter of discretion: *"If deemed necessary by him."* The necessity of the case should rest with the health officer.

Question.

How much can the health officer do without consulting the local board of health?

Answer.

I think the health officer is only one member of the local board of health, and whatever acts are done are the acts of the local board, and cannot be done by him alone. The only thing a health officer can do *by himself* is what is provided for in Seection 13, Number 113, Laws of 1902, in regard to the powers and duties of health officers: "The health officer shall make sanitary inspection. . . . . He may enter any house or other building for the purpose of making inspection. He shall, as secretary of the local board of health, by a written instrument under his hand, order the destruction, prevention and removal within a specified time, of all nuisances, sources of filth or causes of sickness, as directed by the local board of health," and may under order of the State Board of Health do certain other things. His authority as health officer to act by himself is contained in that section, and Section 20, which provides for the investigation and report by him of contagious diseases.

Question.

If I understand correctly, he should not go and make an inspection of any house, without the consent of the local board?

Answer.

I think Section 13 gives him authority to go there. "The health officer shall make a sanitary inspection . . . . he may enter any house . . . . for the purpose of making such inspection." He could do that without any orders.

Question.

Can he quarantine without any reference to the local board of health?

Answer.

He must do this under the authority of the board of health.

H. H. Wheeler, South Burlington.

What about a dead body that might be found in the water, that has been drowned? Shall we make an investigation alone, or call in the selectmen?

Answer.

As I said before, it is necessary for that to be reported to him, for him to make a proper investigation before issuing a certificate, and if deemed

Digitized by Google

necessary, to conduct an autopsy. But it is a case for the selectmen to act also, if there is suspicion of foul play.

Question.

When it is sure there is suicide—when you find the dead body with enough weight in the pockets of the clothing to convince you of that? That occurred two years ago, some two miles south of here; a lady walked off a bank into the lake, with weights in her dress pocket, and she was found in that condition in the water after having been there fifteen or twenty minutes. The people who found her said that they would have to call in the selectmen of the town. Now, where does the health officer get his information, except as it is reported to him? And how is he to know that the information given him is correct and true as to pointing to suicide rather than a violent death?

Answer.

That is one of the cases that comes close to the question, whether it should not be investigated by the selectmen.

Question.

We have had a case like that. We did n't succeed in getting but one of the selectmen, and all the evidence pointed towards a case of suicide. I was satisfied in my own mind that it was, and issued a certificate of death on my own supposition. There is another case where a person—without much doubt—took Paris green. There was no evidence of foul play.

Answer.

Well, that comes pretty close to the line, and I am not able offhand to say. It is always safer, under those circumstances, to call upon the selectmen to act, and if they refuse to act, the health officer could go ahead. I think the law leaves that rather discretionary with the health officers.

Dr. Allbee.

How would it be in one of those cases where the health officer reported a body found? We refer it to the selectmen, to make whatever examination necessary; there is no examination made. Now, how are we to get authority to issue the death certificate?

Answer.

You will get all the authority you have under Section 10. That body could not have been buried until the certificate had been issued.

Question.

Is n't it the duty of the health officer, after the investigations have been made, to issue a certificate of death?

Answer.

It is where he is satisfied that he can give the cause of death.

Digitized by Google

Dr. Holton.

It comes to this: The doctor turns it over to the selectmen, and they say, in their opinion, this person committed suicide; the doctor thinks that this is not sufficient proof, he wishes to be convinced before issuing his certificate. Now, has he a right to order a post mortem examination before he will issue the certificate?

Answer.

If he was not satisfied with what they had done, then he would have a right to make the examination himself, before issuing his certificate of death.

Question.

If the doctor, as health officer and as doctor, performs the autopsy, who pays the bills?

Answer.

Perhaps he should receive the same fee as he would ordinarily charge for the same professional services, unless he is employed for a stipulated salary. This would be recovered from the town or city for which he acts.

General Discussion.

Dr. Holton.

It troubles me, when I make up my reports of statistics to send to Washington: I have had several severe reprimands, saying "More indefinite cases come from your state than from any other state in the Union. . . . . " Now I don't enjoy being threshed any better than anyone else.

A case occurred in ————, last fall. It was a case of accidental death: The report came in: "Cause unknown, but probably heart disease." I should suppose a burial permit would not have been issued. It should not have been issued until the certificate was made out properly.

Question.

Did I understand you, Doctor, that *heart disease* and not *heart failure* is the proper answer to that question?

Dr. Holton.

I do not intend to say that heart disease is one of the recognized causes of death. The cause should be further defined; give the tributary causes. Heart failure may follow pneumonia or typhoid fever, or an injury, dropsy, etc., and a good many of these reports are vague and ill-defined. The blanks require that the tributary causes should be put in also; if they are not filled out, we are warranted in inquiring for further explanation.

Question.

Is n't it on the blank that no vague terms should be used?

Digitized by Google

Dr. Holton.

As far as possible to use no vague terms. There are undoubtedly cases arising where it is necessary to put in something of this kind—that is, a vague and ill-defined cause. When a report comes to me that a man died of *heart disease,* I take it that organic disease is meant, when it probably is *heart failure.* We don't know what it means. For the first six months of 1904, I wrote over sixty letters, inquiring about reports that were made to me, where the cause of death was given as "heart failure," without stating the tributary cause. Usually I find the patient had pneumonia, or typhoid fever, or he had some other disease, but they don't say so in so many words. In my mind I say, "Why did n't he say so in the first place?"

Question.

When a body comes in from a foreign state, with a burial transit permit, with no death certificate attending it, and it comes into my town, am I justified in issuing a certificate on that transit certificate?

Dr. Holton.

Yes, I think so, under the present law.

Question.

I did n't know but I was laying myself liable to the law by so doing.

Dr. Holton.

Whenever a dead body is brought into this state for burial or interment from any state or territory or the Dominion of Canada, the health officer or clerk of the town or city where it is desired to bury or entomb such body, shall issue a certificate of permission for burial or entombment, upon receiving a certified copy of the death certificate or the removal or transit permit accompanying such body, issued under the laws of the state, territory, or Dominion of Canada, where the person died.

Question.

A person died suddenly—he was found dead in bed—in all probability apoplexy or organic heart disease. Now should an autopsy be made? And should a physician be called to take the testimony of the friends? It was probably apoplexy—heart disease did n't have anything to do with it.

Dr. Holton.

You would n't have anything to do under these circumstances. The head of the family is required to notify the health officer.

Dr. Holton.

You did n't get there in time to prevent or cause the death, did you?

Answer.

No, but their own family physician refused to issue a death certificate.

Digitized by Google

Dr. Campbell.

The other day there was a drowning accident; I was called as the family physician to fill out the death certificate. The evidence all pointed to drowning; there was no question about it. Should I have refused to fill out any certificate and called in the health officer?

Answer.

No, simply tell the family to call in the health officer.

Question.

It was a New Hampshire health officer.

Answer.

Well, I presume they have the same laws—perhaps not exactly like.

Carty.

Where a health officer is called in shortly after a death takes place, should he issue a certificate?

Answer.

Yes, I think he should.

Dr. Holton.

I had this certificate of death reported me—reported to me by the town clerk: "Cause of death: Found dead in the road." I wonder if a physician thinks that is a proper statement as to the cause of the death. A good many people have been found in the road that were n't dead, but very much alive. Put it in a more definite form. A man was found dead in the road; it was supposed to be apoplexy; the doctor called it so. If he was satisfied, that is satisfactory, but why did n't he state it so?

Question.

I suspected a premature birth and death in the town—I not only *suspected,* but *knew* it. Have I the authority to inquire? Few people are willing to tell me all about it. They say, "It 's none of your business; you have plenty of business, and this is none of your business." I have wondered if I could not make a few people understand that it is my business.

Dr. Caverly.

You have the state's attorney to prosecute them for not reporting a birth, and for burying a dead body without a permit—in case they did bury it.

Are there any other questions or remarks to make?

Dr. Fish.

Mr. President:—There is a question that came up here yesterday, which seemed to me proper to be referred to among the medical-legal questions in the Question Box—in regard to the reporting of contagious diseases, and

Digitized by Google

the question of the liability of the physician, whether or not they can be *compelled,* without fee, to report them? It came up upon the question of reporting cases of tuberculosis to the State Board of Health. Now, can a physician be *compelled* to report cases of tuberculosis to the State Board of Health, as directed by the Laws of 1902, without any remuneration for the physician, or can a physician be compelled to report cases of contagious diseases to health officers, because there is no fee attached? Those two questions we would all like to have answered. The same principle would govern either.

Dr. Caverly.

My answer to that would be that I don't think there is any question of contract involved in it at all. The state has the right to compel a physician to do it, and the question whether he gets his pay for it, does n't make any difference. It is based upon the police power, as you see—that every citizen is required to do certain things for the protection of health, liberty, etc., of his fellow men—and they have to do that whether they get any fee or not. It is a part of their duty as physicians—a part of their profession—to tell the State Board or the health officers what somebody died of. It is one of the requirements of the law of the state. If tuberculosis is a disease dangerous to public health, then the physician is just as much compelled to report that to the State Board of Health, as he would be a case of smallpox or scarlet fever, and it comes under the police power of the state to compel them to do certain things for the protection of the community.

Question.

I have a case of tuberculosis in my town; it has been in progress six or seven months, and is progressing toward a fatal end. The Laboratory decided several months ago that it was a case of tuberculosis, and I had no reason to question their findings. Have I any authority whatever to make directions in regard to the care of the sputum, etc.? She is allowed to have visitors at all times. The nature of the disease is well known, and visitors come there to see her every day. Now have I the authority to prevent their coming there?

Answer.

No, sir, I don't believe you can prevent their coming to see the lady, unless you quarantine the case, and they don't quarantine tuberculosis.

Dr. Caverly.

Health Officers, Doctors, and Laymen:—I want to thank you who are present, and assure you that the Board fully appreciates the sacrifices that most of you have made to attend the meeetings. I hope we may see you at the next meeting of Health Officers.

Digitized by Google

ARE SMALL QUANTITIES OF PRESERVATIVES PERMISSIBLE?

Dr. H. W. Wiley, chief of the Bureau of Chemistry, Department of Agriculture, Washington, D. C., has the following to say on this subject:—

It is admitted by all who have examined the subject in a critical way, even by the users of preservatives, that in certain maximum quantities the limit of toleration is reached in each individual, and positive injury is done. But it is also well recognized that many, if not all, of the usual foods when used in large excess produce injurious results. The many cases of disease produced by overeating, or by eating improperly prepared or poorly cooked foods, or by eating at unusual times, are illustrations of this fact. Upon this basis and upon the further statement that when used in extremely small quantities the preservatives in question can not be regarded as harmful, is founded the principal argument in favor of the use of the preservatives, aside from the fact that the foods themselves are kept in a better and more wholesome state.

It is only proper to give to this argument full consideration and not to brush it aside as illogical and irrelevant. It is evident that any attempt to determine experimentally the effect of extremely minute quantities of any preservative, even when used continuously, would not be likely to lead to any definite result. In the foregoing data we have illustrations of the fact that even large quantities of the preservative employed—larger by far than would probably ever be found in any food product—do not always act in such a way as to permit of definite interpretation. The claim, therefore, that the use of such preservatives is justified when the amount is extremely small, and when even these small amounts are used only at intervals and not continuously, is worthy of careful consideration.

An illustration which is pertinent may be taken from the particular preservatives with which the foregoing experiments have been made, namely, boric acid and borax. One of the food products to which these preservatives are very commonly added is butter. This statement should not be taken to imply that in butter prepared for domestic use in this country borax is found to any considerable extent. When butter, however, is to be transported over long distances, and necessarily kept a long while, the addition of borax is very frequently practiced.

The dietetic data which have been accumulated in the course of this experiment show that the quantity of butter consumed daily varies from thirty to seventy grams. Suppose, as a maximum, we say that the quantity of butter consumed in any one case daily is 100 grams, and that it contains one gram of boric acid or an amount of borax equivalent thereto. The maximum quantity of boric acid used in a day in this case would be one gram. In point of fact, however, it would rarely, if ever, reach this amount, but even in those cases where butter is eaten freely probably half a gram would be about the maximum quantity consumed. Further than this, one per cent of

Digitized by Google

boric acid, or its equivalent in borax, in butter is a very large quantity. Probably, as a rule, not more than one half of one per cent is employed. In this case the quantity of boric acid likely to be consumed by any one individual in a day would be reduced to one quarter of a gram.

In the case of meats preserved by borax, although larger quantities are eaten than of butter, it is not likely that any larger quantities of borax would be consumed. Thus it appears that those who habitually eat butter and meat preserved with borax might be consuming half a gram or a little more of boric acid per day. But preserved meats are not regularly eaten, and hence the quantity mentioned is likely to be overestimated. It would be unwise to affirm in a case of this kind, in the light of the data obtained by the experiments, that such a minimum consumption of borax, and especially when not a continuous one, would prove deleterious within any reasonable time of observation. The question then arises, Does the absence of such proof or the impracticability of obtaining it serve as a justifiable excuse for the use of this preservative?

This question ought not to be decided alone, because the principle of the decision must stand, not only for boric acid and borax, but for every preservative used in foods. In other words, whatever principle is established for judgment as to the use of boric acid in small portions must also be applied to the use of every other preservative used in foods. The principle must also be still further extended so that whatever may be established as regards butter or meat must be admitted in respect of every other substance used in food. Hence before admitting the full force of the argument based on minimum quantities, the full significance of such admission must be considered and the practically unlimited extent of its application acknowledged.

This leads to the discussion of the fact that in the majority of cases the labor of freeing the system from added preservatives falls principally upon the kidneys. In the method of life in vogue in this country the kidneys are already hard-worked organs. Americans probably eat more freely than the citizens of almost any other country, with the possible exception of England. Large quantities of nitrogenous foods are consumed. In the breaking down of the nitrogenous tissues the kidneys are the chief organs for the excretion of the débris. The addition of any further burden, therefore, no matter how minute, is to be deplored. If, however, the principle be admitted that injurious substances may be used in such small quantities as to be practically harmless, then we find the way open for loading upon the kidneys many different functions in addition to those which they now discharge. If they may be justly called upon to eliminate the small quantities of boric acid added in food, they cannot logically be freed from the necessity of eliminating also minute quantities of salicylic acid, saccharin, sulphurous acids and sulphites, together with the whole list of the remaining preservatives, which are eliminated principally through the kidneys. It would be useless to contend that the occasional consumption of small quantities of boric acid in a sausage, in butter, or in preserved meat would produce even upon delicate stomachs any continuing deleterious effect which could be detected by any of

Digitized by Google

the means at our disposal, but naturally it seems that this admission does not in any way justify the indiscriminate use of this preservative in food products, implying, as it would, the equal right of all other preservatives of a like character to exist in food products without restriction.

It appears, therefore, that there is no convincing force in the argument for the use of small quantities unless it can be established that there is only a single preservative used in foods, that this preservative is used in only a few foods, that it will be consumed in extremely minute quantities, and that the foods in which it is found are consumed at irregular intervals and in small quantities. On the other hand, the logical conclusion which seems to follow from the data at our disposal is that boric acid and equivalent amounts of borax in certain quantities should be restricted to those cases where the necessity therefor is clearly manifest, and where it is demonstrable that other methods of food preservation are not applicable and that without the use of such a preservative the deleterious effects produced by the foods themselves, by reason of decomposition, would be far greater than could possibly come from the use of the preservative in minimum quantities. In these cases it would also follow, apparently, as a matter of public information and especially for the protection of the young, the sick, and the debilitated, that each article of food should be plainly labeled and branded in regard to the character and quantity of the preservative employed.

EFFECT OF BORIC ACID AND BORAX UPON GENERAL HEALTH.

The most interesting of the observations which were made during the progress of the experiments was in the study of the direct effect of boric acid and borax, when administered in food, upon the health and digestion. When boric acid, or its equivalent in borax, is taken into the food in small quantities, not exceeding half a gram (seven and one half grains) a day, no notable effects are immediately produced. The medical symptoms of the cases in long-continued exhibitions of small doses or in large doses extending over a shorter period, show in many instances a manifest tendency to diminish the appetite and to produce a feeling of fullness and uneasiness in the stomach, which is some cases results in nausea, with a very general tendency to produce a sense of fullness in the head, which is often manifested as a dull and persistent headache. In addition to the uneasiness produced in the region of the stomach, there appear in some instances sharp and well-located pains which, however, are not persistent. Although the depression in the weight of the body and some of the other symptoms produced persist in the after periods, there is a uniform tendency manifested after the withdrawal of the preservative toward the removal of the unpleasant sensations in the stomach and head above mentioned.

The administration of boric acid to the amount of four or five grams per day, or borax equivalent thereto, continued for some time, results in most

Digitized by Google

cases in loss of appetite and inability to perform work of any kind. In many cases the person becomes ill and unfit for duty. Four grams per day may be regarded then as the limit of exhibition beyond which the normal man may not go. The administration of three grams per day produced the same symptoms in many cases, although it appeared that a majority of the men under observation were able to take three grams a day for a somewhat protracted period and still perform their duties. They commonly felt injurious effects from the dose, however, and it is certain that the normal man could not long continue to receive three grams per day.

In many cases the same results, though less marked, follow the administration of borax to the extent of two grams and even of one gram per day, although the illness following the administration of borax and boric acid in those proportions may be explained in some cases by other causes, chiefly grippe.

The administration of borax and boric acid to the extent of one half gram per day yielded results markedly different from those obtained with larger quantities of the preservatives. This experiment, Series V., conducted as it was for a period of fifty days, was a rather severe test, and it appeared that in some instances a somewhat unfavorable result attended its use. On the whole the results show that one half gram per day is too much for the normal man to receive regularly. On the other hand it is evident that the normal man can receive one half gram per day of boric acid, or of borax expressed in terms of boric acid, for a limited period of time without much danger of impairment of health.

It is, of course, not to be denied that both borax and boric acid are recognized as valuable remedies in medicine. There are certain diseases in which these remedies are regularly prescribed, both for internal and external use. The value which they possess in these cases does not seem to have any relation to their use in the healthy organism except when properly prescribed as prophylactics. The fact that any remedy is useful in disease does not appear to logically warrant its use at any other time.

It appears, therefore, that both boric acid and borax, when continuously administered in small doses for a long period, or when given in large quantities for a short period, create disturbances of appetite, of digestion and of health.

Digitized by Google

NUMBER 45, LAWS OF 1904.

An Act Providing for the Better Care of the Health of Pupils in Public Schools.

It is hereby enacted by the General Assembly of the State of Vermont:—

Section 1. The State Board of Health and the superintendent of education shall prepare or cause to be prepared suitable test cards, blanks, record books and other needful appliances to be used in testing the sight and hearing of pupils in public schools and necessary instructions for their use; and the superintendent of education shall furnish the same, free of expense, to every school in the state. The superintendent, principal or teacher, in every school, during the month of September in each year, shall test the sight and hearing of all pupils under his charge and keep a record of such examination according to the instructions furnished; and shall notify in writing the parent or guardian of every pupil who shall be found to have any defect of vision or hearing, or disease of eyes or ears, with a brief statement of such defect or disease; and shall make written report of all such examinations to the superintendent of education as he may require.

Sec. 2. The state auditor is hereby directed to draw his order on the state treasurer for such sums and at such times as the superintendent of education, with the approval of the State Board of Health, may require to carry out the provisions of this act. The total expense under this act shall not exceed six hundred dollars in any biennial term ending June 30.

Sec. 3. This act shall take effect July 1, 1905.

Approved November 17, 1894.

The above act went into operation last September, when the first examinations of the eyes and ears and nose and throat of the school children of this state were made. This act did not contemplate the accurate determination of the form or character of the defects in these organs, but simply to determine if a child had *any deviation from normal sight or hearing.* To this end instructions were prepared and issued to the teachers of the state through the town superintendent. The examination having shown that a pupil's vision or hearing varied from the usual standard of children in general, notice was sent to the parent or guardian of such child, stating the fact, with the advice that they consult their family physician or a specialist. The results of these examinations are here given by towns and counties. The causes which have produced these defects are various—schoolrooms ill ventilated and deficient in light; the large amount of work put on blackboards for the pupils to copy has a tendency to produce eye strain; the fact that many books, magazines and newspapers are printed in small, imperfect type tends to weaken the muscles of accommodation, thus adding to the difficulty.

Digitized by Google

ADDISON COUNTY.

	No. of Schools Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes.	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ears.	Right Ear.	Left Ear.	Total Defective in Ears.	Defective in Nose.	Defective in Throat.	Eyes and Ears.	Eyes and Nose.	Eyes and Throat.	Ears and Throat.	Ears and Nose.	Nose and Throat.	Eyes, Nose and Throat.	Eyes, Ears and Throat.	Eyes, Nose and Ears.	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Addison	9	145	76	52	45	6	5	56	1	..	3	4	1	..	..	..	..	..	..	..	1	..	1	..	..
Bridport	11	108	24	22	21	..	..	21	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Bristol	7	164	61	33	33	10	12	55	2	1	2	5	1	..	..	..	..	..	..	..	..	..	..	..	..
Cornwall	7	104	45	43	26	3	5	34	4	1	..	5	2	1	1	..	1	1	..	..	..	..	..	..	..
Ferrisburg	15	245	84	34	53	4	5	62	7	..	1	8	1	1	4	..	2	..	..	4	1	..	1	..	..
Goshen	3	38	7	18	4	1	..	5	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..
Granville	6	63	14	22	8	2	1	11	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..
Hancock	2	50	23	46	17	..	..	17	3	..	..	3	..	..	2	..	1	..	..	..	..	..	..	..	..
Leicester	6	56	7	12½	3	..	..	3	..	..	..	..	..	1	..	..	1	..	..	1	1	..	..	..	..
Lincoln	8	154	56	36	38	5	4	47	2	3	1	6	..	..	10	..	..	..	..	..	..	..	..	..	..
Middlebury	10	509	208	41	100	25	18	143	3	6	7	16	11	21	9	5	1	1	..	..	..	..	1	..	..
Monkton	7	114	42	37	21	6	3	30	1	2	1	4	1	1	1	1	1	..	..	..	..	..	..	..	1
New Haven	9	145	56	39	38	6	5	49	1	..	..	1	..	3	..	2	..	..	..	..	..	..	..	..	..
Orwell	11	136	38	28	25	4	7	36	..	..	..	..	1	..	1	..	..	..	2	..	..	..	..	..	..
Panton	5	67	46	69	26	1	5	32	3	..	3	6	2	2	2	..	..	..	..	1	..	..	1	..	..
Ripton	7	87	33	38	12	6	12	30	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..
Salisbury	9	107	40	37	20	7	5	32	2	..	3	5	1	..	3	1	..	..	..	..	..	1	..	1	..
Shoreham	12	194	71	37	41	7	5	53	3	..	..	3	..	4	4	6	..	..	..	1	..	..	..	..	..
Starksboro	12	147	48	33	32	3	2	37	3	..	..	3	..	4	1	1	2	..	..	..	..	..	..	..	..
Vergennes	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Waltham	2	28	20	71	4	..	1	5	1	..	..	1	..	3	..	..	..	2	..	..	..	2	..	..	..
Weybridge	4	46	19	41	11	..	..	11	1	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..
Whiting	5	54	14	26	12	..	..	12	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	167	2771	1082	37	590	96	95	781	41	13	21	75	21	42	57	20	17	5	6	9	3	3	4	1	2

BENNINGTON COUNTY.

	No. of Sched. Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes.	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ears.	Right Ear.	Left Ear	Total Defective in Ears.	Defective in Nose.	Defective in Throat.	Eyes and Ears.	Eyes and Nose.	Eyes and Throat.	Ears and Throat	Ears and Nose	Nose and Throat.	Eyes, Nose and Throat.	Eyes, Ears and Throat.	Eyes, Nose and Ears.	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Arlington	6	104	36	35	18	8	7	33	2	1	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..
Bennington	14	350	119	34	85	6	7	98	2	2	..	11	..	3	4	1	1	..	1	..	..	..	..	..	..
Dorset	13	241	96	39	71	9	6	86	2	1	1	4	..	..	2	2	..	..	..	..	..	..	..	..	..
Glastenbury	1	4	3	75	3	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Landgrove	3	33	14	42	12	..	..	12	..	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..
Manchester	12	186	58	31	33	10	4	47	3	..	..	3	..	3	2	..	1	..	..	..	..	..	..	..	..
Peru	4	39	10	25	5	1	1	7	1	..	..	1	..	1	..	..	..	2	..	1	..	..	..	..	..
Pownal	13	62	42	68	29	4	5	38	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..
Readsboro	9	164	54	33	43	4	5	52	1	..	..	1	1	..	..	..	..	..	1	..	..	..	..	..	..
Rupert	8	94	33	35	17	3	5	25	2	2	..	4	..	..	2	..	..	..	..	..	..	..	1	..	..
Sandgate	5	69	17	27	4	3	2	9	..	..	2	2	3	..	1	1	..	..	..	..	..	1	..	..	..
Searsburg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Shaftsbury	10	185	61	33	38	4	5	47	1	1	1	3	..	1	9	1	..	..	..	..	..	..	..	..	..
Stamford	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sunderland	4	77	20	26	12	..	4	16	1	1	..	2	..	1	1	..	..	..	..	..	..	..	..	..	..
Winhall	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Woodford	2	28	11	39	7	1	..	8	..	..	1	1	..	..	1	1	..	..	..	..	..	..	..	..	..
Total	104	1629	574	35	377	53	51	481	22	8	6	36	8	11	22	6	4	..	2	2	..	1	1	..	..

Digitized by Google

CALEDONIA COUNTY.

	No. of Schools Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes.	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ears	Right Ear.	Left Ear.	Total Defective in Ears.	Defective in Nose.	Defective in Throat.	Eyes and Ears.	Eyes and Nose.	Eyes and Throat.	Ears and Throat	Ears and Nose.	Nose and Throat.	Eyes, Nose and Throat.	Eyes, Ears and Throat	Eyes, Nose and Ears.	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Barnet	15	199	48	24	42	1	..	43	1	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..
Burke	6	115	31	27	14	5	5	24	4	1	..	5	..	1	1	..	..	..	..	..	..	..	..	..	..
Danville	12	258	113	44	76	5	5	86	1	..	1	2	..	..	20	1	1	2	..	..	..	1	..	..	..
Groton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hardwick	9	456	202	44	115	14	6	135	7	1	4	12	5	6	15	11	10	..	1	2	2	..	3	..	..
Kirby	4	38	19	51	10	2	4	16	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	..
Lyndon	10	382	143	37	103	4	2	109	10	1	1	12	1	1	13	1	4	1	..	..	..	1	..	..	..
Newark	3	63	21	33	12	1	1	14	2	..	..	2	..	1	1	3	..	..	..	..	..	..	..	..	..
Peacham	8	83	37	45	22	5	6	33	2	..	..	2	..	..	1	..	..	..	1	..	..	..	..	..	..
Ryegate	3	90	26	29	20	1	2	23	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..
Sheffield	8	107	27	25	18	3	1	22	1	..	1	2	1	..	1	..	1	..	..	..	..	..	..	..	..
St. Johnsbury	27	834	318	38	215	10	11	236	11	3	4	18	7	20	16	7	7	2	2	2	1	..	..	..	..
Stannard	2	26	12	46	10	..	..	10	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Sutton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Walden	5	64	27	42	21	1	2	24	..	1	1	2	..	..	..	..	..	..	..	..	..	..	..	1	..
Waterford	6	56	18	32	16	..	2	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wheelock	6	87	21	24	14	4	1	19	1	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..
Total	129	2857	1063	37	708	56	48	812	42	7	12	61	15	32	71	26	24	5	4	4	3	2	3	1	..

CHITTENDEN COUNTY.

	No. of Schools Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes.	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ears	Right Ear.	Left Ear.	Total Defective in Ears.	Defective in Nose.	Defective in Throat.	Eyes and Ears	Eyes and Nose.	Eyes and Throat.	Ears and Throat.	Ears and Nose.	Nose and Throat	Eyes, Nose and Throat.	Eyes, Ears and Throat.	Eyes, Nose and Ears	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Bolton	5	78	29	37	19	..	2	21	1	..	1	2	2	..	1	..	2	..	1	..	..	..	..	..	..
Burlington	46	1804	663	37	425	44	69	538	9	16	11	36	5	5	37	7	9	2	4	2	16	3	1	1	4
Charlotte	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Colchester	9	220	97	44	44	2	5	51	1	4	..	7	2	8	5	5	4	2	2	1	..	..	1	1	1
Essex	18	338	110	33	77	3	14	94	2	2	..	4	..	..	12	..	..	15	..	..	..	..	..	..	..
Hinesburgh	11	167	58	31	30	2	3	35	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Huntington	5	92	36	39	30	3	..	33	1	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..
Jericho	9	152	48	32	33	6	1	40	..	1	..	1	..	..	4	2	..	..	1	..	..	..	..	..	..
Milton	11	256	95	37	55	6	8	69	7	..	..	7	..	2	12	2	..	1	..	1	..	1	..	..	..
Richmond	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Shelburne	10	201	55	27	35	2	8	45	1	1	..	2	3	2	..	..	2	..	..	..	..	..	..	..	1
So. Burlington	7	129	31	24	22	4	2	28	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
St. George	1	12	6	50	3	1	..	4	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Underhill	13	212	80	38	58	6	10	69	..	1	2	3	..	2	5	..	..	..	..	..	1	..	..	..	..
Westford	7	114	20	18	17	..	1	18	2	..	..	2	..	..	..	..	1	..	1	..	..	..	..	..	..
Williston	11	142	50	35	37	2	..	39	5	..	..	5	..	..	4	..	..	..	..	..	..	..	..	..	..
Total	163	3909	1372	35	840	81	123	1084	34	20	18	72	19	21	83	16	26	5	11	4	17	4	2	2	6

Digitized by Google

ESSEX COUNTY.

	No. of Schools Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes.	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ears.	Right Ear.	Left Ear.	Total Defective in Ears.	Defective in Nose.	Defective in Throat.	Eyes and Ears.	Eyes and Nose.	Eyes and Throat.	Ears and Throat.	Ears and Nose.	Nose and Throat	Eyes, Nose and Throat.	Eyes, Ears and Throat.	Eyes, Nose and Ears.	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Bloomfield	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Brighton	11	228	70	31	45	5	4	54	2	5	..	7	1	1	4	1	..	..	2	..	..	..	..	..	..
Brunswick	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Canaan	6	131	26	19	20	...	...	20	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...	...	1
Concord	13	184	65	35	57	1	1	59	1	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...
East Haven	3	80	6	20	6	...	...	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Granby	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Guildhall	3	81	35	43	33	4	1	38	1	...	...	1	...	...	4	...	1	...	...	...	...	...	...	...	...
Lemington	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lunenburg	9	142	55	39	40	3	4	47	1	...	...	1	...	2	4	1	...	...	3	...	...	...	...	...	...
Maidstone	3	17	2	12	2	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Norton	3	52	11	21	11	...	...	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Victory	4	41	23	54	13	4	6	23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	55	906	292	32	216	17	16	249	6	5	..	11	1	3	18	4	2	..	3	..	..	..	..	..	1

FRANKLIN COUNTY.

	No. of Schools Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes.	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ears.	Right Ear.	Left Ear.	Total Defective in Ears.	Defective in Nose	Defective in Throat.	Eyes and Ears.	Eyes and Nose.	Eyes and Throat.	Ears and Throat.	Ears and Nose.	Nose and Throat.	Eyes, Nose and Throat.	Eyes, Ears and Throat.	Eyes, Nose and Ears.	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Bakersfield	10	150	48	32	35	1	...	36	...	...	...	1	1	5	1	...	...	...	...	2	...	...	...	...	...
Berkshire	12	189	69	36	39	6	5	50	3	...	...	3	2	1	3	3	...	...	...	...	...	...	1	...	...
Enosburg	11	328	124	38	66	13	10	89	5	...	...	5	3	...	3	5	1	...	...	...	...	...	1	...	1
Fairfax	11	301	103	34	60	13	12	85	3	2	1	6	1	...	5	3	1	...	...	...	...	2	...	...	...
Fairfield	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fletcher	8	115	53	45	44	...	3	47	2	...	...	2	...	...	3	2	...	...	...	1	...	...	...	...	...
Franklin	11	172	71	41	50	5	5	60	...	...	...	...	1	4	7	2	5	1	1	...	...	...	...	...	...
Georgia	11	161	54	34	41	3	10	54	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Highgate	16	281	98	35	55	8	14	77	...	...	...	...	...	4	7	2	5	1	2	...	...	...	...	...	...
Montgomery	13	281	116	41	68	12	8	88	1	1	...	2	2	3	13	2	1	...	1	...	...	3	...	1	...
Richford	8	354	141	40	83	16	9	108	4	1	2	7	4	6	13	2	7	1	1	...	...	...	...	...	...
Sheldon	14	179	80	45	47	4	3	54	2	1	2	5	2	1	8	4	3	1	...	1	...	...	1	...	1
St. Albans, City	21	698	220	31	156	18	12	186	3	4	1	8	2	3	10	8	4	1	...	1	...	...	...	1	...
St. Albans, Town	11	153	64	37	45	5	6	56	2	...	1	3	...	...	4	...	...	...	...	...	...	1	...	...	...
Swanton	15	282	52	18	32	4	2	38	10	...	...	10	...	2	1	...	1	...	...	...	...	...	...	...	...
Total	172	3644	1292	35	821	108	101	1030	30	14	8	52	18	37	75	25	26	5	6	5	6	1	2	2	2

Digitized by Google

GRAND ISLE COUNTY.

	No. of Schools Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes.	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ears.	Right Ear.	Left Ear.	Total Defective in Ears.	Defective in Nose.	Defective in Throat.	Eyes and Ears.	Eyes and Nose.	Eyes and Throat.	Ears and Throat.	Ears and Nose.	Nose and Throat.	Eyes, Nose and Throat.	Eyes, Ears and Throat.	Eyes, Nose and Ears.	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Alburg	10	216	79	37	56	7	4	67	2	2		2													
Grand Isle	7	113	39	35	20	2	2	24	3	4		7	1	1	5										
Isle la Motte	2	50	10	20	9			9	1			1													
North Hero	4	77	25	32	19	2		21	1			1	1	1	4	1	1								
South Hero	4	60	36	60	31	1	3	35	1			1						2							
Total	27	516	189	37	135	12	9	156	8	4		12	2	3	9	1	4	2							

LAMOILLE COUNTY.

	No. of Schools Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes.	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ears.	Right Ear.	Left Ear.	Total Defective in Ears.	Defective in Nose.	Defective in Throat.	Eyes and Ears.	Eyes and Nose.	Eyes and Throat.	Ears and Throat.	Ears and Nose.	Nose and Throat	Eyes, Nose and Throat.	Eyes, Ears and Throat.	Eyes, Nose and Ears.	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Belvidere	6	61	18	29	10		1	11	4			4			1										
Cambridge	15	250	80	34	62	9	6	77	1			1													
Eden	8	128	35	27	26	2	3	31	2			2	1		1										
Elmore	8	108	36	33½	29		2	31	1			1	2	1	1										
Hyde Park	13	215	55	26	42	6		48	1			1			5	1									
Johnson	9	250	92	39	62	6	6	74							1		1				1				
Morristown	19	393	121	31	67	11	9	87	2	1		3			7	1	3				1				
Stowe	15	341	134	39	81	13	20	114	5	2		7		2	6	1	2	2				1			
Waterville	5	69	37	54	33	1	1	35						1											
Wolcott	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total	98	1815	608	33	412	48	48	508	23	3	2	28	4	5	23	5	6	2	1	1	3	1	2	1	4

Digitized by Google

ORANGE COUNTY.

	No. of Schools Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes.	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ears.	Right Ear.	Left Ear.	Total Defective in Ears.	Defective in Nose.	Defective in Throat.	Eyes and Ears.	Eyes and Nose.	Eyes and Throat.	Ears and Throat.	Ears and Nose.	Nose and Throat.	Eyes, Nose and Throat.	Eyes, Ears and Throat.	Eyes, Nose and Ears.	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Bradford	8	217	96	44	52	2	5	59	3	1	3	7	1	2	7	5	2	1	1	..	....	....	....	....	1
Braintree	10	134	52	39	31	5	4	40	2	1	..	3	1	1	4	..	1	..	1	1	....	....	....	....	....
Brookfield	9	136	17	12½	15	..	..	15	..	..	..	....	....	1	1	..	..	..	..	..	....	....	....	....	....
Chelsea	11	167	64	45	45	5	8	58	..	..	..	....	....	1	4	1	..	..	..	..	....	....	....	....	....
Corinth	11	163	54	33	30	1	..	31	2	1	..	3	1	..	4	2	3	1	..	4	1	....	....	....	....
Fairlee	3	39	21	54	1	..	1	2	1	1	..	2	..	3	4	1	1	2	1	1	1	....	3	....	2
Newbury	13	328	124	38	79	8	6	93	6	1	2	9	1	7	9	1	2	2	..	..	....	....	....	....	....
Orange	7	102	37	36	19	1	1	21	1	..	..	1	3	2	4	2	2	..	1	..	....	1	....	....	....
Randolph	9	465	190	41	119	10	8	137	11	1	2	14	5	8	8	11	3	..	1	1	....	....	1	....	....
Strafford	9	124	31	25	24	1	3	28	1	..	..	1	..	1	1	..	..	..	..	..	....	....	....	....	....
Thetford	10	131	45	34	36	2	4	42	..	2	..	2	..	1	..	..	..	..	..	..	....	....	....	....	....
Topsham	11	156	72	46	52	5	..	57	2	..	..	2	..	1	8	1	..	..	..	1	....	....	1	1	....
Tunbridge	10	111	32	29	27	2	..	29	..	..	..	....	1	....	1	..	1	..	..	..	....	....	....	....	....
Vershire	6	58	14	24	11	1	..	12	..	..	..	....	....	1	....	1	..	..	..	..	....	....	....	....	....
Washington	7	113	36	32	26	1	1	28	3	..	..	3	..	....	4	..	1	..	..	..	....	....	....	....	....
West Fairlee	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Williamstown	16	275	91	33	66	1	2	69	4	3	2	9	2	2	6	1	1	..	..	1	....	....	....	....	....
Total	150	2719	976	36	633	45	43	721	35	9	12	56	16	31	64	26	17	7	5	9	2	2	5	2	3

ORLEANS COUNTY.

	No. of Schools Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes.	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ears.	Right Ear.	Left Ear.	Total Defective in Ears.	Defective in Nose.	Defective in Throat.	Eyes and Ears.	Eyes and Nose.	Eyes and Throat.	Ears and Throat.	Ears and Nose.	Nose and Throat.	Eyes, Nose and Throat.	Eyes, Ears and Throat.	Eyes, Nose and Ears.	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Albany	6	90	38	42	32	1	1	34	1	..	..	1	1	..	1	1	..	..	..	..	....	....	....	....	....
Barton	6	193	61	32	48	4	3	55	1	1	1	3	1	1	1	..	..	..	..	..	....	....	....	....	....
Brownington	7	112	40	36	31	5	1	37	2	..	..	2	..	1	..	..	..	..	..	..	....	....	....	....	....
Charleston	11	152	64	42	43	..	..	43	8	..	..	8	..	1	1	..	..	2	..	..	....	1	....	....	....
Coventry	7	89	35	49	26	5	2	33	1	..	..	1	..	....	1	..	..	..	..	..	....	....	....	....	....
Craftsbury	14	170	55	32	44	4	1	49	..	..	1	1	..	1	2	..	..	..	..	..	....	....	....	....	....
Derby	21	533	191	28	132	14	19	165	10	2	3	15	1	3	6	2	..	..	..	..	....	1	....	....	....
Glover	10	143	50	35	32	4	1	37	1	1	1	3	2	3	2	2	1	..	..	..	....	....	....	....	....
Greensboro	8	90	16	18	13	1	1	15	1	..	..	1	..	....	....	..	..	..	..	..	....	....	....	....	....
Holland	8	152	60	39	43	3	3	49	2	1	..	3	1	....	3	4	..	..	..	..	....	....	....	....	....
Irasburg	8	145	42	29	30	3	5	38	..	..	..	....	....	....	1	1	..	..	..	..	....	....	....	....	....
Jay	5	66	37	56	23	6	2	31	1	..	..	1	..	....	4	1	..	..	..	..	....	....	....	....	....
Lowell	9	148	52	35	40	..	..	40	..	..	40	....	....	....	6	1	..	..	..	..	....	....	....	....	....
Morgan	5	84	15	18	15	..	..	15	..	..	..	....	....	....	....	..	..	..	..	..	....	....	....	....	....
Newport	9	536	160	30	113	7	13	133	3	..	..	3	1	....	17	6	..	..	..	..	....	....	....	....	....
Troy	6	108	36	33⅓	31	..	..	31	1	..	..	1	..	....	4	..	..	..	..	..	....	....	....	....	....
Westfield	7	97	24	25	11	4	3	18	2	..	..	2	..	....	2	..	..	2	..	..	....	....	....	....	....
Westmore	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total	147	2908	976	34	707	61	55	823	34	5	46	45	7	10	51	19	3	2	..	..	....	2	....	....	....

Digitized by Google

RUTLAND COUNTY.

	No. of Schools Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes.	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ears.	Right Ear.	Left Ear.	Total Defective in Ears.	Defective in Nose.	Defective in Throat.	Eyes and Ears.	Eyes and Nose.	Eyes and Throat.	Ears and Throat.	Ears and Nose.	Nose and Throat.	Eyes, Nose and Throat.	Eyes, Ears and Throat.	Eyes, Nose and Ears.	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Benson	10	142	62	44	47	2	2	51	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..
Brandon	10	440	150	34	96	10	12	120	6	1	..	7	1	..	12	1	..	..	..	..	..	..	..	..	..
Castleton	12	252	101	40	55	9	11	75	6	..	1	7	8	5	3	3	1	..	..	1	..	..	..	..	..
Chittenden	6	85	28	33	14	2	4	20	4	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..
Clarendon	7	84	58	69	49	3	3	55	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..
Danby	10	115	51	44	47	..	2	49	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..
Fair Haven	5	535	255	48	184	18	23	220	7	1	..	8	..	1	19	5	2	..	..	..	..	..	..	..	..
Hubbardton	8	76	23	30	18	..	3	21	1	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Ira	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mendon	3	59	20	36	16	..	..	16	..	..	..	..	1	..	..	1	1	..	..	1	..	..	..	..	..
Middlet'n Sp'gs.	4	91	28	31	16	..	1	17	1	..	..	1	5	..	4	1	..	..	..	..	..	1	..	..	..
Mount Holly	9	141	34	24	27	2	2	31	2	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..
Mount Tabor	3	61	33	54	20	..	1	21	3	..	..	3	..	..	9	..	..	..	..	..	..	..	..	..	..
Pawlet	13	209	54	26	39	5	1	45	3	..	..	3	1	..	1	..	2	..	..	1	..	..	1	..	..
Pittsfield	2	52	11	21	7	..	..	7	2	..	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..
Pittsford	13	330	86	26	58	7	4	64	2	1	1	4	1	4	5	4	..	..	1	3	..	..	..	..	..
Poultney	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Proctor	12	422	123	29	69	23	16	108	3	..	1	4	..	..	11	..	..	..	..	..	..	..	..	..	..
Rutland, City	49	1441	355	24	216	18	44	278	8	9	3	20	2	9	23	10	10	1	..	1	..	..	1	..	..
Rutland, Town	8	132	33	25	23	6	3	32	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Sherburne	4	75	36	48	29	1	3	33	1	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..
Sudbury	5	56	13	22	8	..	1	9	2	..	..	2	..	..	1	..	..	..	1	..	..	..	..	..	..
Tinmouth	4	67	24	36	21	..	21	21	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Wallingford	12	225	98	44	63	5	8	75	1	..	..	1	..	..	8	..	10	..	..	..	..	..	..	..	1
Wells	6	89	34	38	18	2	..	20	2	..	1	3	2	3	5	..	..	..	..	..	1	..	..	..	..
West Haven	6	47	15	32	9	1	3	13	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
West Rutland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	221	5221	1725	34	1145	109	168	1401	56	13	7	76	26	35	109	27	32	2	4	8	1	2	1	2	1

WASHINGTON COUNTY.

	No. of Schools Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes.	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ears.	Right Ear.	Left Ear.	Total Defective in Ears.	Defective in Nose.	Defective in Throat.	Eyes and Ears.	Eyes and Nose.	Eyes and Throat.	Ears and Throat.	Ears and Nose.	Nose and Throat.	Eyes, Nose and Throat.	Eyes, Ears and Throat.	Eyes, Nose and Ears.	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Barre, City	35	1616	329	20	217	38	27	282	15	5	3	23	3	3	11	6	1	..	..	..	..	..	..	..	..
Barre, Town	23	527	148	28	108	5	19	132	2	..	1	3	3	2	6	1	..	..	..	..	..	..	..	..	2
Berlin	9	177	50	28	38	3	5	46	1	..	..	1	..	1	2	..	..	..	..	..	..	..	..	..	..
Cabot	12	165	56	34	26	5	2	33	3	..	..	3	6	..	7	3	..	..	..	..	..	..	4	..	..
Calais	11	160	78	49	60	3	4	67	3	..	..	3	..	..	8	..	..	..	..	..	..	..	..	..	..
Duxbury	8	115	41	36	33	..	1	34	4	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..
East Montpelier	10	114	44	39	34	..	..	34	..	..	..	..	3	1	5	..	..	..	1	..	..	..	..	..	..
Fayston	7	79	18	23	13	1	3	17	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Marshfield	12	169	60	36	44	3	1	48	1	1	..	2	..	..	5	..	1	..	..	1	1	..	1	..	1
Middlesex	10	133	58	44	33	9	5	47	1	..	..	1	2	1	6	..	..	..	..	..	..	..	1	..	..
Montpelier	12	445	217	49	139	14	13	166	18	7	2	27	..	..	24	..	..	..	..	..	..	..	..	..	..
Moretown	9	133	43	32	25	5	5	35	1	..	1	2	..	..	2	..	1	..	..	1	..	1	..	..	1
Northfield	13	540	183	34	126	8	4	138	6	2	3	11	6	5	12	3	4	..	..	2	1	..	..	..	..
Plainfield	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Roxbury	7	101	34	34	24	1	..	25	..	..	..	..	3	2	2	2	..	..	..	..	..	..	..	1	..
Waitsfield	6	85	23	26	16	3	..	19	1	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..
Warren	9	119	34	28	10	7	9	26	1	..	1	2	1	..	5	..	..	..	..	..	..	..	..	..	..
Waterbury	17	312	112	36	84	9	9	102	2	1	1	4	..	..	3	..	1	1	..	1	..	..	..	..	..
Woodbury	10	120	48	40	35	1	1	37	4	..	1	5	..	..	3	1	..	..	..	..	..	..	..	..	..
Worcester	6	79	28	35	20	2	..	22	..	..	..	..	2	..	3	..	..	..	..	..	..	1	..	..	..
Total	225	5189	1603	31	1085	117	108	1310	63	16	13	92	31	17	105	16	8	1	1	5	2	2	6	1	4

Digitized by Google

WINDHAM COUNTY.

	No. of Schools Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes.	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ear.	Right Ear.	Left Ear.	Total Defective in Ears.	Defective in Nose.	Defective in Throat.	Eyes and Ears.	Eyes and Nose.	Eyes and Throat.	Ears and Throat	Ears and Nose.	Nose and Throat.	Eyes, Nose and Throat.	Eyes, Ears and Throat.	Eyes, Nose and Ears.	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Athens	2	13	7	54	3																				
Brattleboro	12	582	206	35	106	37	26	159	9	5	2	16	2	2	14	4	3		3			2	1		
Brookline	2	25	7	28	5	2		7																	
Dover	6	66	19	29	15	1	1	17									1	1							
Dummerston	7	89	19	21	15			15									2								
Grafton	8	103	48	47	29	1	3	33	1	1	1	3	3	1	6	2							1		
Guilford	9	109	18	17	11		1	12						1	1		1		1	1					
Halifax	9	108	51	47	44	1	1	46							4				1						
Jamaica	8	73	35	48	12	1	7	20	1	1		2	6		3	2				1					
Londonderry	12	116	43	37	27	4	5	36	1	1	2	4			1	1									1
Marlboro	4	65	14	22	13	1		14																	
Newfane	7	111	22	20	15	5	1	21							1										
Putney	8	110	39	35	28	1	3	32	1			1			1	1	2			1					
Rockingham	33	991	335	34	182	41	37	260	15	15	13	43	23	10	12	11	2	2	2	2	7		1		
Somerset																									
Stratton	2	15	1	7	1			1																	
Townshend	6	77	33	43	21	2		23		2	1	3	3		1	1			1		1				
Vernon	4	57	32	56	11	6	4	21	2			2			5	2			1						
Wardsboro	6	86	34	40	29			29							2	1			1				1		
Westminster	10	155	58	34	23	2	11	36	2			2	3		2	1	1			1					
Whitingham	13	133	44	33	24	4	5	33	2	1		3	1	1	4					1			1		
Wilmington	9	175	80	46	43	13	8	64					3	2	5	1	3	2							
Windham	4	62	16	26	13	1		14							2										
Total	191	3321	1156	35	488	74	78	640	19	11	6	36	21	7	61	16	13	3	8	5	1	2	3	2	1

WINDSOR COUNTY.

	No. of Schools Reported.	No. of Children Examined.	No. found Defective.	Per cent of Defectives.	Both Eyes	Right Eye.	Left Eye.	Total Defective in Eyes.	Both Ears.	Right Ear.	Left Ear.	Total Defective in Ears.	Defective in Nose	Defective in Throat.	Eyes and Ears.	Eyes and Nose.	Eyes and Throat.	Ears and Throat.	Ears and Nose.	Nose and Throat.	Eyes, Nose and Throat.	Eyes, Ears and Throat.	Eyes, Nose and Ears.	Ears, Nose and Throat.	Eyes, Ears, Nose and Throat.
Andover																									
Baltimore	1	12	2	16⅔	2			2																	
Barnard	11	90	24	27	14	2		16																	
Bethel	5	180	71	39	46	6	3	55	2		2	4													
Bridgewater	8	116	38	33	35		1	36	2			2	2	2	2	2	1								
Cavendish	8	188	72	38	52	2	1	55	2			2	3	2	2	2	2	1		1		1			
Chester	16	245	101	41	54	6	9	69	2	2	1	5	3	3	3	4	3	1	1	1		1			
Hartford	21	361	124	36	60	4	3	67	5	1	2	8	10	6	11	2	1	2			2				
Hartland	14	188	57	31	33	4	13	50		1		1		1	3	1			1						
Ludlow																									
Norwich	12	149	64	43	40	10	4	54	2						6	1									
Plymouth	8	77	32	42	22			22	2			2			1		1			1					1
Pomfret	6	63	21	33⅓	16		1	17					1	1	2										
Reading	5	75	39	52	26	3	4	33	1			1	1	3						1					
Rochester	10	241	100	41	58	4	6	68	4		1	5	5	4	5	5	3		2	2		1			
Royalton	12	201	51	25	32	4	7	43		2	2	4			2	1					1				
Sharon	8	81	26	32	16	3	6	25			1	1													
Springfield	18	581	218	38	135	24	17	176	2	3	1	6	5	3	11	10	5		2						
Stockbridge	6	93	34	37	15		1	16	1			1	4	1	3	5	1								
Weathersfield	10	130	37	28	26	2	4	32	3			3		1	1										
Weston	7	120	40	33⅓	29	6	4	39						1											
West Windsor	6	76	31	41	20	2	5	27						1	2	1				1					
Windsor	10	304	104	34	75	8	6	89	4		1	5		2	7	1									
Woodstock	13	372	146	37	83	18	10	111	7			7		9	7	1	3	4	1			3			
Total	215	3968	1432	36	889	108	111	1108	37	9	11	57	34	40	73	45	21	7	9	9	4	6	7	4	1

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

Volume VI. No. 3.

Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

NOTICE.

In accordance with a new tariff regulation issued by the American Express Company, there will be a charge of one-half rate on empty water bottles. These charges should be paid by the parties receiving the outfit.

Clean Air.—Dr. Prudden says that it is interesting to note from the careful experiments which have been made that ordinary ventilation, however effective it may be in supplying fresh air and in removing contaminated gases, has no noteworthy effect in the removal of dust, either floating or at rest. Experiments also prove that hanging garments out of doors merely, is not to be commended. Unless such articles are brushed, or beaten, or shaken, or unless they flap violently in the wind, bacteria are not removed in great numbers. The writer emphasizes the fact that a large part of so-called disinfection might be replaced to advantage with proper methods of sweeping, dusting and mopping, if all these were not so simple and commonplace, and if everyone could realize the significance of dust in the conveyance of infectious agents. He emphasizes the importance of the use of moist mops on the floor, and of moist dust cloths on the solid furniture. He denounces the employment of the feather duster. The sprinkling of damp sawdust on floors before sweeping is a great aid in getting rid of much dust. He declares that the infectious

Digitized by Google

diseases of the respiratory organs are steadily increasing as people are more and more huddled together in offices, dwellings, traveling conveyances and places of public assemblage. A large number of these diseases are directly traceable to infectious material passed off in spitting, coughing and sneezing, by those suffering from various degrees of local disease. Promiscuous spitting should be stopped. The harmfulness of coughing and sneezing can in most instances be controlled by the use of a handkerchief.

TRICHINÆ SPIRALIS.

The director of the Laboratory, Dr. Stone, reports as follows:—

The daily press frequently reports cases of poisoning from eating meats, especially pork. These cases are usually ascribed to ptomaine poisoning, and probably in most instances rightly so. In the last two months there have come to the attention of our Laboratory two groups of cases of meat poisoning which are of unusual interest. These are cases of infection with the trichinæ spiralis contracted in the one case from eating sausage and in the other from smoked ham. The first lot of cases occurred in an Italian colony and included some fifteen individuals. One of the Italians made up a quantity of spiced Italian sausage and invited his friends and relatives to a holiday festival on New Year's Day. At this time he brought out the sausage, which was largely partaken of by all, with the result that nearly every one became sick, and one died. Many of these cases are still ill, but there will probably be no more fatalities. Portions of this sausage were sent to the laboratory and subjected to examination. It was found to be free from injurious preservatives or coloring matter, but seemed very close to the putrefactive stage. This gave weight to the diagnosis of the attending physicians that they were dealing with ptomaine poisoning. A microscopical examination of bits of lean meat in the sausage disclosed quantities of the trichinæ. No microscopical examination of tissue from the fatal case has been made, but there can be no possible doubt that infection with this parasite accounts for the major part, at least, of the symptoms.

The other cases, though fewer in number, are even more interesting, from a medical point of view, because the conditions were such that they could be carefully studied. These cases occurred among the members and friends of a single family, and infection is clearly traced to pork which they had raised themselves. Following this infection there have been two deaths, and four persons are now sick. In this case the diagnosis of trichinosis was made from the clinical symptoms and the Laboratory was called upon for confirmatory evidence. Pieces of pork were submitted and found infected, and later an examination of some of the muscle from one of the fatal cases was examined and found to contain literally millions of the parasites.

The trichina spiralis is an animal parasite belonging to the group vermes

Digitized by Google

(worms). The adult parasite inhabits the small intestine of man and a number of domestic animals following infection. It is from one fourth to one sixth of micro-millimeter in length. The young worm or larva inhabits the muscle and lies incysted between the fibres. It is probable that hogs become infected most often by eating infected rats. Man is usually, as in these cases, infected by eating uncooked or underdone lean pork in which are some of these larvæ. The capsule of the muscle trichina is dissolved by the gastric juice and the parasite liberated. Within two days the embryos develop into sexually ripe forms, and during about a week, while they remain in the intestinal tract, they bring forth an enormous number of young trichinæ. These young worms penetrate the intestinal wall and migrate to various parts of the body, where they finally settle in the muscles, giving rise to an acute inflammation with a train of symptoms often resulting in death. After about fourteen days the young trichinæ coil themselves up and are encapsulated by the end of the fifth week. In this state they may remain for years, capable of development at any time. See cuts on following pages.

The treatment is prophylactic, and pork users should take great care that the meat is well cooked. Recently infected pork is perfectly normal in appearance. Long after an infection the parasite becomes surrounded by a deposit of lime salts, and a careful naked-eye examination will then disclose an abnormality. In this condition the pork is said to be "measly," but as most pork is eaten young more often than not this condition is not reached.

Any case of trichinosis in pork is likely to become a focus from which infection may spread widely, as almost invariably portions of the slaughtered animal are left where rats can gain access to it, and every one knows the migratory habits of the rat. Hogs eating these infected rats become themselves infected and thus new cases may spring up at considerable distances from the original case. These two groups of cases occurring at distant parts of our state suggest that the disease may be becoming more widespread among swine, and it will be surprising if other cases of human infection do not occur.

A careful study of these cases is being made by the physicians in charge, and their results will be published later. For this reason the clinical details are not given here.

SANATORIUM OFFICERS.

DIRECTORS OF NEW INSTITUTION ELECT F. C. PARTRIDGE PRESIDENT.

The directors of the Vermont sanatorium met at Proctor, February 20, and transacted such business as was brought before it. All of the members were present except Governor Bell, member *ex officio*, and Dr. H. C. Tinkham of Burlington. The directors decided to have plans drawn up at once for the new sanatorium, the gift of Senator Proctor, which is to

Digitized by Google

be located at Pittsford and to have everything in readiness to start building as soon as the weather permits.

It was the first business meeting and of importance from an organization standpoint. Officers were elected as follows: President, F. C. Partridge of Proctor; vice president, F. G. Butterfield of Derby Line; treasurer, Miss Emily B. Proctor of Proctor; secretary, Dr. W. N. Bryant of Ludlow; executive committee, president, *ex officio*, Dr. C. S. Caverly of Rutland, D. D. Burditt of Pittsford, Olin Merrill of Enosburgh Falls, and Redfield Proctor, Jr., of Proctor.

Finance committee, ex-Governor C. S. Page of Hyde Park, George Aitken of Woodstock, and the Rev. J. P. Barrett of Burlington.

DIRECTIONS FOR THE COLLECTION, AND TRANSMISSION TO THE STATE LABORATORY OF HYGIENE, OF MATERIALS FOR MEDICO-LEGAL EXAMINATION.

1. When a case of suspected poisoning occurs, the body and its surroundings should be carefully examined. In the examination of the body all external discolorations, stains, bruises and scars must be carefully noted. The appearance of the hands, lips, and tongue should be the object of special attention, as many substances which cause death have a corrosive action or leave a distinctive stain. The surroundings of the body must be carefully looked over and any vial or box or other receptacle that may have contained a medicinal or poisonous substance should be forwarded to the Laboratory under seal.

2. The organs and materials which are to be sent to the Laboratory for chemical and pathological examination should be removed under the most cleanly conditions possible. In case of suspected poisoning of a human being the materials forwarded should include the brain, stomach, entire intestinal tract, liver, kidneys, spleen, piece of muscle from the thigh, and the urine. When the bodies of domestic animals are to be examined for poisons, the stomach, liver, kidneys, urine, and a sample of blood should be forwarded. In either case the organs and other material must be sent in separate vessels. The vessels must be new and clean and no metalic coverings or stoppers of any kind may be used. These vessels should be sealed in such a manner that the covers or stoppers cannot be removed without destroying the seal or cutting the tape. No preservative should be used unless shipment is necessarily delayed and decomposition has begun. In this case, alcohol may be put in the vessels and a quart of the alcohol must be sent to the Laboratory in a separate receptacle, with the other material.

3. A careful set of notes must be taken at the time of the autopsy; and

Digitized by Google

the surroundings of the body, the marks and discolorations of the body, the size of the various organs and their condition, whether normal or abnormal, should be included, together with any other information which may furnish a clue to the cause of death.

4. A clear and complete description of the sickness and death of each human being or domestic animal should be kept and a copy sent along with the materials for examination. Such things as the condition of the fæces; whether there was a great desire for water; whether there were spasms before, or at the time of death, or any other noticeable symptom, should be included in this description.

5. The examination of such organs and other materials is made free of charge under the conditions indicated in Section 4, Act Number 90 of the Legislature of 1900, which is as follows:—

SECTION 4. The use of the laboratory, and all investigations mentioned in this Act therein made, shall be free to the people of this State. And whenever the state's attorney of any county, on the order of a judge of the supreme court, shall request for use in any criminal case pending in his office, an expert investigation, chemical or pathological, of any substance, such investigation shall be made at the laboratory forthwith, without charge to the state, and the expert making such investigation shall submit the results of his work to the state's attorney at whose request it is done and shall attend court as a witness at any place in the state when required to do so by subpœna and submit in court the results of his investigations, and shall be paid as such witness his actual expenses of attendance when summoned by the state.

6. For more complete directions for medico-legal autopsy, see the article by M. J. Wiltse, M. D., in Bulletin No. 3, Vol. IV., of the quarterly issued by the Vermont State Board of Health. A copy of this bulletin will be sent upon application.

LABORATORY OF HYGIENE,

196 Main Street, Burlington, Vt.

Digitized by Google

Digitized by Google

614.0979
V2b

UNIV. OF MICH.
MAY 12 1908

Bulletin No. 4, Volume VI.

Issued Quarterly by

Vermont State Board of Health,

June 1, 1906.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS:

School Hygiene.
Some Remarks on Our "Cold Weather Diseases," by Charles S. Caverly, M. D.
The Control of Transmissible Diseases, by A. C. Abbott, M. D., Chief of the Bureau of Health, Philadelphia.
Report Made to the Public Health and Marine Hospital Service.
Milk.
Fifty Dairy Rules.
List of Local Health Officers in the State of Vermont.
News Items.
School of Instruction for Health Officers.

BRATTLEBORO, VT.
1906

Digitized by Google

Digitized by Google

[The following from the British Medical Journal is of interest to educators as showing the attention being given to School Hygiene in England.]

SCHOOL HYGIENE.

SURREY.

REPORT OF THE EDUCATION MEDICAL OFFICER.

The report of the Surrey Education Committee contains in an appendix the report of the education medical officer, Dr. T. Henry Jones, upon medical supervision of elementary schools. As Surrey is one of the few counties which has appointed an education medical officer, we give the report in full as being of practical interest.

PRELIMINARY REPORT UPON THE MEDICAL SUPERVISION OF SCHOOLS.

During the three months that have elapsed since I took office I have visited a number of schools in the various districts of the county, and have endeavored in this way, and by conference with school managers and clerks, the superintendents of school attendance, and others interested in the work, to make myself acquainted with the local circumstances to be considered in dealing with the subject as a whole.

The objects that must be aimed at have already been enumerated in the interim report of the Special Committee upon medical inspection. They may be classified for convenience thus:—

I. Medical inspection of school children.

1. To prevent the spread of communicable diseases.

2. Examination and certification of children absent from school on the ground of illness.

3. Examination of children unfit for ordinary school work or for physical training.

4. Examination and certification of blind, deaf, dumb, defective, and epileptic children.

5. To ensure that healthy children shall not be injured by the school course.

6. Routine periodical examination of *all* children for: *(a)* Registration of weight, measurement, and development; *(b)* discovery of unsuspected physical defects for report to parents.

Digitized by Google

II. Medical examination of teaching staff and others.

1. Teachers: *(a)* Upon their appointment; *(b)* applying for absence on the ground of illness.
2. Pupil teachers upon engagements.
3. Successful candidates for county scholarships.
4. Candidates for employment on headquarters staff.

III. Sanitary supervision of schools.

IV. Instruction in hygiene of *(a)* teachers, *(b)* scholars.

It is evident that to carry out all these duties thoroughly in a county area of over 700 square miles, containing some 260 schools (a large number of which have several departments), accommodating 60,000 children, would involve a considerable organization and some expense. Hitherto such work has been undertaken only by borough authorities, and by them only in part; the task would necessarily be much more difficult in a county. It will be best, therefore, not to attempt too much at the outset, but to begin with the more necessary part of the work, and gradually to add to it, by experimental stages, as the machinery grows more perfect.

It will have to be decided eventually whether a special medical staff is to be employed for school work only, or existing means for medical inspection utilized. In either case the chief problem will be to arrange that a doctor's services shall be available when required for every school in the county. If that can be attained it will be a comparatively simple matter to arrange for the performance of all the duties classified above.

At the same time it may be laid down as a general principle, for the sake of economy and convenience, that the help of teachers and others must be obtained as far as possible for the work, and that doctors must be employed only when their services are absolutely necessary. The function of a medical officer should be in the main to organize and supervise the routine work that must be carried out, much, though not by any means all, of which can be undertaken by lay assistants. But obviously a very considerable proportion of the work outlined above is such as can be undertaken only by medical men.

In order to decide what duties it will be practicable to undertake from the beginning with such means as are at present available, it will be convenient to consider the groups more fully in the order given.

I. MEDICAL INSPECTION OF SCHOOL CHILDREN.

1. *The prevention of the spread of infectious and contagious diseases in the schools.*

School attendance being compulsory, education authorities cannot escape this obvious responsibility. It is really public health work, pure and simple, and in suggesting its performance by county authorities it has been pointed

Digitized by Google

out in the Report of the Committee on Physical Deterioration "that bringing the sanitary administration of the county into touch with the schools may lead to the anticipation and prevention of many of those epidemics which are now such a fertile source of local expense."

School authorities have daily charge of about one fifth of the whole population, and that the most susceptible to infectious diseases, with facilities for inspection denied to sanitary authorities; the latter have an organization and legal powers to deal with such diseases not possessed by the former. Therefore the object to be aimed at is complete and prompt coöperation between school authorities and sanitary authorities, which ought to be of the utmost benefit to both.

Daily medical inspection of schools for this purpose is out of the question. But the services of teachers and school-attendance officers might well be utilized; they have unequalled opportunities for constant observation of all the children under their care. If they can be brought to observe intelligently, and if proper and systematic use can be made of the results of their observations, then a very great step will have been taken in the right direction. With this purpose in view I have prepared a short memorandum upon the subject, in which are laid down clear rules for dealing with all infectious and contagious diseases in the schools, and for prompt notification of their occurrence both to the local medical officers of health and to myself. Short notes are given upon the early symptoms of the commoner diseases; the subject of school closure is touched upon; also the ventilation, cleansing, and disinfection of school premises. I would recommend that this be issued in the form of a pamphlet to all teachers, school-attendance officers, and other persons interested, in order that a uniform system may be adopted throughout the county.

By means of the prompt notifications that I hope to receive under this system, I shall be enabled to keep a record of the occurrence of all communicable diseases in every school in the county, and to pay special visits to any schools that may require attention. The notifications regularly furnished to district medical officers of health of all non-notifiable infectious diseases should be of considerable value. Under present conditions early information of such cases is not obtainable, and a medical officer of health may hear of their occurrence too late to enable him to take any useful measures to prevent their spread.

It will be observed that in the memorandum teachers are directed to exclude scholars suffering from notifiable infectious diseases until a medical certificate of fitness to return can be produced. This should not be difficult to obtain where children have been medically attended during their illness. In many cases it should be possible to arrange with the local medical officers of health that they should give such certificates in return for the information supplied to them from the schools. For non-notifiable infectious diseases and some contagious diseases definite periods of isolation and quarantine are given, which will do away with the necessity for medical certificates. These have been fixed carefully with the object of ensuring safety and at the same

Digitized by Google

time the least possible interference with general school attendance. For certain contagious diseases, however, certificates are required, which for the present parents should be encouraged to procure from their own doctors. It is directed that whenever doubt arises about the return of any child to school the education medical officer should be applied to. Under such circumstances I should pay special visits to examine children, but it is hoped that local arrangements will be made for the purpose as far as possible, as it would obviously be very difficult for one medical officer to cope with requests to visit individual children in many places at the same time.

It is hoped that the scheme suggested may help somewhat to check the spread of infection, and that school closure may consequently be less often required. It will naturally take some time to get into working order, and no plan of the kind can be expected to work perfectly, but it is an attempt to deal with a difficult subject with the means nearest to hand.

2. *Examination and certification of children absent from school on the ground of illness, free of expense to parents.*

To carry this out thoroughly would necessitate arrangements being made for the immediate examination of every child suffering from the most trivial complaint that might be regarded as an excuse for absence. Though this would be useful it would certainly not be practicable in the large area of a county under present conditions.

The chief reason for the provision of medical certificates by the Education Committee is to decide the question whether or not alleged ill health is a sufficient excuse for absence in doubtful cases. There is, of course, no obligation upon the education authority to provide these certificates, but it is done in order that there may be no suggestion of harshness of procedure. Another reason for the requirement of certificates is in connection with the system of prize giving for regular school attendance. Medical certificates should seldom be required for either of these purposes if every school-attendance officer could be relied upon to give such a report upon each case as could be accepted by the School-Attendance Committee or the managers as a sufficient excuse for absence. Thus, if that official finds upon his visit that a child is really ill and attended by a doctor, no certificate need be asked for; if he finds that a child is kept at home for some obviously reasonable though more trivial cause, such as broken chilblains or a swollen face, his report to that effect ought to be quite sufficient.

There would then be left for special medical examination only such cases as school-attendance officers were in doubt about. The number of these cases ought to be kept as low as possible, and school-attendance officers should have no great difficulty in doing this. I understand that local school-attendance committees have in most cases made their own temporary arrangements for medical examination of such doubtful cases, at fees varying with local circumstances. From information supplied to me by the superintendents of school attendance I calculate that an average of 1 per cent per annum of the whole school population have so far required examination.

Digitized by Google

This ought to be an ample allowance, but it may be prudent to add another one-third per cent for extra requirements, which would mean a total of 800 certificates a year for 60,000 children.

3. *Examination of all children unfit for the ordinary school course or for physical training.*

4. *Examination of blind, deaf, dumb, defective, and epileptic children.*

For all these purposes I should adopt the principle of preliminary selection by teachers and others of children to be medically examined, in order to save the time, expense, and interruption to school work involved by medical inspection of every class.

In order to have a uniform system of working in these seven districts it would be arranged that in every case short particulars about each child to be submitted for examination, either by a teacher or a school-attendance officer, should be sent beforehand to me upon a special form. I should allocate these forms to their districts, and arrange to visit a center when the number of children for examination made that necessary. Before my visit I should give due notice to the teachers and attendance officers concerned, upon receipt of which they would notify the parents of the children to be examined the time and place of examination, and request them to attend. The notices to parents would in most cases be sent on cards from the schools. There would, of course, be no suggestion of compulsion in the matter, their attendance would be optional. The procedure is merely suggested to facilitate the work, which could not otherwise be performed by one medical officer.

By this arrangement it is hoped that the presence of parents or guardians would be secured, in order that they might receive at first hand directions about their children. Any certificates of exemption required would be sent directly to the teachers or attendance officers concerned.

This would provide a comprehensive scheme of medical examination under headings I. (1)—(4) in these particular districts, containing rather more than one fifth of the whole school population of the county. If the experiment were found successful it would be possible to extend the system gradually to other districts.

In the meantime I would suggest that in other districts systematic examination of children unfit for school work [I. (3)] be set aside for the present, as it would be impossible for one medical officer to do it throughout the county.

4. *Examination of defective and epileptic children.*

This would be a necessity in all districts, on account of the obligation placed upon the Committee to deal with them. A census of the children supposed to come into this category was recently prepared for the use of the Special Committee upon Defective and Epileptic Children, and their number was estimated to be 182. It is possible that this estimate may have to be revised after a more careful classification; and, for that purpose, I would

Digitized by Google

suggest that specially prepared forms be now sent to all head teachers upon which they will be required to give full particulars about any children supposed to belong to this class. I should then arrange to make an examination of all the children selected for the purpose from these returns either at centers or at individual schools or homes as required, and to give the necessary certificates for them.

In view of the proposed home to be established for mentally defective children belonging to the county, it may be found convenient for the medical officer who will be appointed to take charge of the home to make the final selection of cases for admission into it, in order that he may be fully responsible for all cases coming under his care from the outset.

5. *To ensure that healthy children shall not be injured by the school course.*

This really involves medical supervision of the work, working methods, and appliances of each school, as well as inspection of individual children. It will be possible to undertake only a small part of it at present—namely, in the schools that will be visited for other purposes. An attempt will be made also by means of lectures to teachers to secure their interest and help in the work.

6. *Routine periodical examination of all children for (a) registration of weight, measurement, and development; (b) discovery of unsuspected physical defects for report to parents.*

This would be a very large task to undertake, though it is undoubtedly one that should be aimed at sooner or later. Its thorough performance would involve the medical examination of every child, both upon entering school and at frequent intervals afterwards, in order that a continuous record might be kept of its physical condition (including the special senses, eyesight and hearing). Such a record would incidentally furnish statistical information of the greatest value. Hitherto no education authority in England has attempted the task fully, and it may well be set aside as impracticable under present conditions in a county area; it represents the ideal of medical inspection of school children.

SCHOOL NURSES.

School nurses have hitherto been employed only in towns where it is possible for them to go from one school to another without trouble or loss of time, and to refer immediately to the medical officer when in any doubt. They are not intended to take responsibility in medical matters, their training does not fit them for it, and it would be most unwise to expect it of them. Their best work is done only under adequate medical direction and supervision. In large towns their chief function has been to exclude children suffering from ringworm, pediculosis, and other diseases due to dirt, from the schools. The conditions of the children in a county area do not call for

Digitized by Google

so much attention for that special purpose, the work of the nurses would be more general, on lines to be indicated below.

There are obvious drawbacks to the employment of whole-time school nurses in a county. The distances to be traversed in all weathers to reach widely scattered schools constitute in themselves a great difficulty. Medical supervision of their work cannot be so complete as in a town. A further difficulty is the cost; in London it has been found after experiment that twenty schools in the poorer districts, and forty in the better-class districts, are as many as a whole-time school nurse can attend to properly; such a ratio could not well be observed in a county area. I do not therefore recommend the employment of whole-time nurses, at all events for the present. But it would be possible to obtain the part-time services of district nurses in several places in the county by arrangement with the local nursing institutions. I understand that such a course has already been adopted by the school managers at Farnham and at Haslemere with excellent results. Apart from economy it would be advantageous to employ local nurses because they are always available, know their districts thoroughly, and are known and trusted by the people with whom they will have to deal.

Having made inquiries locally, I find that the services of fully trained nurses could be obtained in at least eighteen districts to visit the elementary schools, in return for a small subscription to the funds of the nursing associations. The nurses available for the purpose (only fully trained nurses being considered) are district nurses belonging to the Queen Victoria Jubilee Institute, parish nurses, and nurses belonging to local benefit nursing associations. In my preliminary interviews with representatives of the local committees, I have suggested payment by a subscription calculated to cover the cost of the proportion of the nurse's time devoted to the schools, thus: If a nurse be asked to give five hours a week to the schools in her district, and receives a salary of £100 a year from the local association, the subscription due from the Education Committee for her services would be, roughly, £6 a year. This arrangement would be equitable, and would enable the cost of any extension of the work to be readily calculated.

I think the experiment would be worth trying upon such terms for six months in a few selected districts. If it be found satisfactory in them it may be extended later to other districts, as soon as arrangements can be made for medical supervision of the work. I have selected five districts in which to recommend its adoption: Mortlake, Woking, Farnham, Carshalton, and Epsom. These districts I propose to visit regularly myself for medical inspection, and I shall therefore be able to supervise personally the work of the nurses in them, so that it may be started upon right lines. They are populous centers, whose schools are presumably in need of more attention than those of rural districts. Seven nurses would be available in them, for seventeen schools containing 6,602 children, at an estimated total cost not exceeding £50 a year, or £25 for the six months. In view of possible extension of the work it may be well, however, to increase the estimate to £50.

The duties of the nurses would be:—

Digitized by Google

(a) To pay regular visits to the schools, and to inspect any children submitted by teachers, advising as to their exclusion, etc., and to select from these any standing in need of special medical examination.

(b) To inspect whole classes in the schools individually, should occasion arise for it—for example, on account of any communicable disease.

(c) To take the necessary steps with regard to children suffering from parasitic skin diseases, or sent to school in a dirty condition, and where possible by judicious oversight to see that remedial measures are carried out by the parents.

Such duties as these performed by nurses would greatly add to the efficiency of medical supervision of schools at relatively small cost. Their work would probably be found capable of considerable extension in the near future. I look forward to the development in poorer districts of a system of regular home visits by nurses to cases of trifling complaints for which no doctor would be consulted. Their function would be not to treat but to show the mothers what to do. In this way much loss of school attendance might be prevented, the nurses acting, in fact, as extra attendance officers, hastening the recovery and return to school of many absentees.

Further, it would be of the greatest benefit to arrange that a nurse should visit at home certain of the children who had been examined by the medical officer at a center or school, in order to see that the parents were acting upon the advice given them. Without some such provision as this medical examination may lose much of its value in many cases through not being followed up. Nurses employed thus would be the means of conveying valuable instruction to parents, who would probably welcome their visits. But it must be repeated that their functions would be purely advisory and exhortatory; no treatment can be undertaken by the education authority.

II. MEDICAL EXAMINATION OF THE TEACHING STAFF AND OTHERS.

Under this heading have been grouped the necessary medical examination of all teachers, pupil teachers, successful candidates for county scholarships, and candidates for appointment on the headquarters staff. The total number to be examined will probably be about 400 a year.

With regard to teachers it may be stated that it would not be practicable to examine all upon their appointment. The examination must for the present be limited to such cases as managers are in doubt about, either upon new appointment, or at any other time—for example, when applying for absence on the ground of illness. For the purposes of the Elementary School Teachers (Superannuation) Act it is necessary for certificated teachers to be examined by medical officers nominated for the purpose by the Board of Education. I would suggest that all who come into this division should be given their choice either of producing certificates from their own doctors, or of being specially examined by the education medical officer free of charge.

The certificates of those selecting the former alternative would all be sent

Digitized by Google

to me for reference in order that I might advise upon any doubtful cases. Those who elected to be examined by me would be dealt with thus:—

1. Teachers *(a)* upon new appointment or *(b)* applying for leave of absence	By special visits.
2. Pupil teachers upon engagement (150)	In groups at centers by arrangement.
3. Successful candidates for county scholarships (125)	
4. Candidates for employment on headquarters staff	By special arrangement.

III. SANITARY SUPERVISION OF SCHOOLS.

It is not anticipated that the general condition of the school buildings will need so much attention as the other subjects enumerated, as they have already been inspected by the Committee's surveyor.

The sanitary supervision of schools, however, involves more than a surveyor's inspection; it is necessary to consider their heating, lighting, and ventilation, furniture, appliances, cleansing, and sanitary conveniences, with regard to their direct bearing upon the health of both teachers and scholars who have to work in them for five hours a day. The subject is intimately connected with that referred to in Class I. (5). I hope in the course of time to visit every school in the county with this object in view, but it will obviously not be practicable for one medical officer, having many other calls upon his time, to complete such a visitation rapidly. Many of the visits will be paid in conjunction with these for the other purposes already specified.

IV. INSTRUCTION IN HYGIENE.

There can be no doubt that instruction of teachers is an essential preliminary to the instruction of scholars; any other means of teaching the children would be unduly expensive and not nearly so efficient. The subject, therefore, resolves itself for the present into instruction of teachers in hygiene. This should be undertaken as soon as possible, and I recommend the formation of classes at a few centers for the purpose. It would be sufficient as a beginning to give a short course of four to six lectures at each center.

The subjects to be treated in these courses would be the simple and essential laws of health in their relation to schools and school work without undue scientific details. Special attention would also be paid to explaining and elaborating the hints given to teachers in the accompanying memorandum upon communicable diseases; this I consider to be of the greatest practical importance. The attempt would, in fact, be made to interest teachers in the hygienic functions which should rightly belong to them. The cost would be but trifling: there would be nothing to pay for hire of rooms; the personal expenses of the education medical officer would come under the head of general traveling expenses; a small sum would be required for the purchase of diagrams, etc. An ample estimate would be £25.

Digitized by Google

SUMMARY OF RECOMMENDATIONS.

The recommendations made above, which I beg to submit for the consideration of the Committee, may be summed up in order:—

I. Medical inspection of school children, to be restricted for the present to:—

1. Prevention of the spread of infectious and contagious diseases (see also separate memorandum).
2. Examination and certification of a limited number of children absent from school on the ground of illness.
3. Examination of all children unfit for the ordinary school work, or for physical training, in certain selected districts only; the number of districts to be increased gradually if practicable.
4. Examination of all blind, deaf, dumb, defective, and epileptic children throughout the county.

To supplement the work of the education medical officer, suggested:—

(a) Continuance of present arrangements with local doctors to give certificates in a strictly limited number of cases for school attendance purposes, at a total cost estimated not to exceed £125 a year.

(b) Experimental employment of district nurses in certain centers for six months, to visit seventeen schools, at an estimated cost not to exceed £25; but, in view of possible extension of the work, £50 allowed.

II. Medical examination of teachers, pupil teachers, county scholars, and headquarters staff.

To be undertaken by the education medical officer, but all members of this group to be given the option of examination by their private doctors at their own expense.

III. Sanitary supervision of schools.

To be undertaken by the education medical officer, and carried out gradually.

IV. Instruction of teachers in hygiene.

To be undertaken forthwith by the education medical officer. Expenses estimated not to exceed £25.

Should the Committee see fit to adopt these recommendations, they would involve an expenditure of £200 a year. To this might be added £200 to cover traveling, clerical, and incidental expenses. This in addition to the salary of the education medical officer, would bring the estimated total expenditure upon medical supervision of schools to £900 a year.

Besides all this, the education medical officer has to deal with infectious and contagious diseases, school closure, ventilation, cleansing, and disinfection of schools.

Digitized by Google

SOME REMARKS ON OUR "COLD WEATHER DISEASES."*

By Charles S. Caverly, M. D.

It is during the winter months that the doctor has learned to expect his hardest work. From November to April we have most and most serious sickness in our latitude.

This is, of course, more than a coincidence. The season must have something to do with it. Does cold weather cause this annual rise in our sickness and mortality? If so, is it the *direct* cause?

My excuse for this paper has to do with the answers to these questions.

There is quite a long list of "cold weather diseases"; it includes all those respiratory disorders from the head cold to those twin destroyers, consumption and pneumonia; the grip, diphtheria, and various throat infections; whooping cough, and the exanthemata, measles, scarlet fever and smallpox; and finally cerebro-spinal meningitis.

Furthermore, cold is often held accountable for complications and exacerbations in ailments, of whose origin it is quite innocent; so that when our rheumatic patient is worse it is an easy explanation to say he must have "taken cold," or if the puerperal woman becomes feverish we may acquiesce in the popular judgment that she has "taken cold." The cold weather has thus become part and parcel of our etiology; it has furnished an easy explanation to the popular mind of many pathological conditions which we understand and know to have other causes, and of other conditions which are still obscure. It colors our theories and overshadows our practice.

Cold is the bugaboo of the average dweller in our northern latitude. To keep warm is his chief aim during half the year.

With the approach of winter man proceeds to fortify his castle. He puts on the double windows and the storm doors, banks up the foundation walls, and proceeds to shovel coal. He barricades his winter quarters against the elements, aiming to make them as impervious as possible to the air outside. *Ventilation* is a word foreign to his vocabulary; its practice an unknown art. Heat is his object; all else is forgotten.

There is, I believe, a popular fancy that fresh air is in some way brought into our houses with heat. Fortunately this is not wholly without reason. Fireplaces and stoves *do* create a certain circulation of the air. Air from some source must find entrance to replace that removed by such methods of heating. So, loose construction and momentary opening of doors are often unrecognized benefits.

The hot-air furnace is sometimes planned to heat air taken from outside, but the fresh-air duct more often ends in the cellar or in the cold front hall above. With direct steam and hot-water heat we have no air circulating. Special devices for extracting foul air and introducing fresh are rarely a part of our house plans.

* Read at the April meeting of the Rutland County Medical and Surgical Society.

Digitized by Google

So with our houses tightly battened against the air outside, we spend half the year in paying tribute to the coal barons, in a struggle to keep warm.

Not only do we thus fortify ourselves against the cold without, but we fill our winter dens with various air-polluting materials; we *furnish* our houses. Of furniture we are lavish. There are tables and chairs and sofas, desks and pianos, the walls are hidden by bric-a-brac, well-filled bookcases and pictures; curtains and portieres obstruct doors and windows; and finally the floor is provided with a rich catch-all, called a carpet; all dust collectors. For a vigorous description of this hibernating custom, which might almost be termed a mania, I commend a recent paper in the *New York Medical Record,* from the pen of Dr. W. H. Northrup. And for a scientific and readable account of the dangers we thus run, nothing better can be found than Dr. T. M. Pruden's article on "Clean Air," in the same issue of the same journal.

Dust, visible and invisible, is inseparable from man's abode. Dust means germs. Germ-bearing dust floats freely about where we hibernate. It never gets away from nature's laws, but is carried about in every current of air, and during the stillness of the night settles on the nearest convenient surface; this may be a table or chair, the bric-a-brac or pictures, the curtains or portieres; and the carpet catches and holds whatever misses the rest.

It was John Tyndall who taught by the simple and beautiful experiment of the glass box whose sides were coated with glycerine that germ life and visible dust meant the same thing. The visible track of light through the dusty air of the box disappeared altogether when that dust had had time to settle and be held by the sticky sides. Then liquids, which soon grew foul and putrid when exposed to ordinary air, remained sweet and fresh when exposed to this dust-free air. So our boxes, or, as Northrup calls them, "bell jars," in which we hibernate, are alive with germs, as they are filled with dust. It were bad enough to think of breathing and re-breathing this air loaded with the exhalations and volatile excreta from our mucous membranes and skins, but when we consider that this same air may become the carrier of the essential causes of disease, the situation becomes filled with disquieting possibilities.

Fortunately, as we know, all germs are not hostile to man. We do know, however, that a certain minority are dangerous.

Introduce into our winter quarters a case of disease and this stagnant, unclean air we may trust to do the rest. Whether it be a case of ordinary cold, or of tonsilitis, or of pneumonia, or of grip, or of one of the exanthemata, the possibilities of *several* cases instead of *one* are good.

Among other facts produced by Pruden, in the article referred to, it is stated that there is danger in our houses from the germs that are killed by drying, like the pneumococcus, the influenza and plague bacilli, the diplococcus of meningitis and the gonococcus, as well as from those which may remain virulent in dust like the tubercle bacillus, the diphtheria bacillus, and the streptococci and staphylococci.

He says we have quite as valid evidence of the communicability of pneu-

Digitized by Google

monia, influenza, whooping cough and cerebro-spinal meningitis as we have of the generally acknowledged contagious tuberculosis.

Adding to these the exanthemata, we have a formidable array of infections, whose spread is facilitated by the foul and dusty air of our houses. While some are sprayed directly through the air in the acts of coughing, sneezing, and even talking, others become a part of the dust and are put into circulation whenever air currents dislodge them from the dust-collecting furnishings.

So it comes about that the more we shut out pure air and fill our rooms with objects of ornament and use, the better we fit them for becoming disease disseminators.

Does this tally with our daily experience?

I am told by the nervous invalid, carefully shut up in well-furnished apartments, that she has suddenly developed a head cold; she has not been out for weeks or indeed had a breath of pure air.

Another patient tells me that if one of the family has the grip all are sure to have it. There is seldom a winter that I do not see pneumonia attack more than one of the same family. Such happenings would not seem strange if it were diphtheria or smallpox, but these other diseases have escaped largely the dictum of preventive quarantine. And yet, when we come to think, these occurrences are not wholly providential. They do follow some fixed natural law. Some time we shall fathom that law, and it will then be as plain that these are cases of cause and effect as when our patient sickens from a dose of tangible poison.

Our "cold weather diseases" flourish, and, as practitioners, we take too little heed, I fear, of the logical reasons.

If we were as intent on keeping out heat as we now are of cold, and shut ourselves up as closely during the warm months, I have little doubt we should soon hear about our "warm weather diseases."

There are signs of a reaction. The universal crusade against the great white plague has perhaps started it. Pneumonia is added to consumption, as a disease demanding "clean air." The doctrine of fresh air and the outdoor life is receiving tardy attention at the hands of the profession; it even promises to become popular. How soon this will come depends largely on us.

Ancient theories and fears become antiquated, but they die hard. When a belief becomes as firmly rooted in the human mind as this, that low temperatures are inimical to health, it will require much persistent and tactful reasoning to dislodge it.

The practical conclusions that suggest themselves from the foregoing are these:—

First. Our houses should be planned for *ventilation* as well as heat. This may be accomplished in connection with the heating apparatus or independently.

Fireplaces have a certain practical value for removing used-up air, though of small heating value. Hot-air furnaces, with properly planned fresh-air

Digitized by Google

ducts, and so-called indirect and direct-indirect steam heating furnaces are also efficient.

When direct steam heat or hot water is depended on, however, special provision should be made for the introduction of fresh air and the removal of foul.

Second. Our houses should be furnished more simply. We should be less extravagant of various hangings of soft materials and upholstered furnishings, which are first-class dust collectors. Carpets are an abomination, especially in sleeping rooms.

As pointed out by Pruden, reform is necessary in our methods of sweeping and dusting. While this cannot be done at night in private dwellings, *dry sweeping and dusting* may be largely replaced by moist. Moistened pieces of papers scattered over the floor help in this process, and dusting with moist cloths saves much scattering of dust particles through the air of the room.

Third. Every house might well have a sick room. When sickness comes the whole house should not be invaded. This is important for the well members of the family, and for the sick person, too.

The people should know, as they have now been taught about tuberculosis, that each case of infectious disease reproduces, on a larger or smaller scale, the essential poison of the disease; that this poison may be unconsciously scattered about wherever the sick person goes. We know that a case of any disease does better if isolated somewhat from all except the necessary nurse.

The Michigan State Board of Health has been accustomed to publish, in its reports, charts showing the number of cases and the fatalities per outbreak where isolation and disinfection are practiced, and where these precautions are neglected. These charts have a pointed meaning in other diseases than measles, and diphtheria, and smallpox. They certainly show fewer deaths as well as fewer cases where these simple precautions are carried out in these generally recognized infections; and I have no doubt that similar precautions put into use with reference to all our "cold weather diseases" would show similar results.

So I say every house should have a *hospital room;* a room planned and furnished on the simple plans of a hospital. They are now practically unknown, so that when we are called to attend one of these diseases our first thought should be to properly locate our case. In a general way we should plan our campaign somewhat after the procedures we should follow with any of the quarantinable diseases.

We should organize our case with reference to preventing the spread of the disease. The sick room should be well removed from other living rooms, and should be furnished with hospital simplicity.

Communication with the sick room should be restricted, and all infectious excreta should receive careful attention, being disinfected or destroyed at their source.

Digitized by Google

Fourth. At the conclusion of the case *disinfection* of the room and its furnishings should be the rule.

It is just here that limited space and limited furnishings will be appreciated. The practicability of effective disinfection depends quite largely on these factors. If a whole house filled with choice bric-a-brac and hangings is infected with the disease-carrying dust, sterilization or disinfection is at best unsatisfactory.

Finally. Our "cold weather diseases" are only indirectly the result of the season. Their increased prevalence in winter is quite largely due to our methods of housing ourselves.

Dusty air is always unhealthy; infected with the specific germ of a "cold weather disease," it becomes a disseminator of that disease.

Thus may we explain much of our annual sickness; and by applying certain rules based on these premises we may do something to curtail both their spread and their fatalities.

THE CONTROL OF TRANSMISSIBLE DISEASES.

BY A. C. ABBOTT, M. D., CHIEF OF THE BUREAU OF HEALTH, PHILADELPHIA.

The object for which public health organizations exist is the prevention of disease. It is a safe statement that all diseases known to be transmissible are preventable, especially when the channels through which transmission occurs are known.

With this before us, it is obvious that nothing can be done in the way of preventing disease without a knowledge of the location of such disease, therefore, prompt registration of all cases of transmissible disease is a fundamental necessity for the success of the work.

In the past, it was the custom to register only those diseases that possessed conspicuous epidemic tendencies. The opinion that prevails to-day is that all transmissible diseases should be registered. In some cases, diseases so registered will be subject to rigid official supervision, in others not. The latter group comprehends those mildly transmissible diseases that are often perpetuated and disseminated through local conditions, which local predisposing conditions may often be eliminated by the application of appropriate sanitary measures.

Next in importance to prompt registration is the designation of the places in which all diseases of a conspicuously transmissible nature are located. To this end it has become customary to employ a placard that is posted upon the house and sets forth the character of the disease in that house. The value of the placard in the control of contagious diseases has been a bone

Digitized by Google

of contention in many quarters for a long time. Nevertheless, the placard is still employed in most localities in which this whole subject is viewed seriously. To what extent the placard aids in lessening dissemination cannot be said, but it certainly gives notice of the existence of dangerous disease to any one who might desire to enter a house in which such disease exists. This, in my opinion, constitutes its greatest value. Where the placard is used, it should be placed on all portals of entrance to the house or the apartment in which the disease exists.

Where practicable, those in authority should assure themselves that isolation of the patient is complete, and that communication between the patient and the surrounding neighborhood is reduced to a minimum. This can only be done by the most careful attention to details; namely, no one should be permitted to enter or leave the sick room without appropriate over clothing that is left in near proximity to the sick room, nor without disinfection of the hands, face, and other exposed surfaces, on leaving the sick room.

Such precautions should be taken by the physician, nurse, clergyman, undertaker, members of the family, etc. Domestic animals of no sort should be permitted about the sick room. The windows should be screened to prevent access of flies, etc. No refuse of food should be permitted to leave the sick room until it has been disinfected by boiling water or chemicals.

Isolation should be continued until the patient is absolutely well and free from danger to others. In scarlet fever, for instance, until desquamation is complete, and this is determined only by a careful examination of the entire body, especially the soles of the feet, the heels, and the palms of the hands. Convalescents from scarlet fever, suffering from discharges of the nose and ears, should be kept under careful observation, and should be told that they are a possible source of danger to others until such discharges have ceased.

In the case of diphtheria, the throat should be free from diphtheria germs before the house is fumigated.

When dealing with people who are too obstinate or ignorant to carry out the appropriate measures, the house should be quarantined, that is to say, an officer of the law should be placed at the entrance to prohibit the escape of any one or any thing from the house.

When the patient is well, the room in which he had been isolated should be fumigated and thoroughly cleansed, after which, and not until then, the placard should be removed. All children or other persons in attendance upon public schools, Sunday schools, etc., should be debarred from attendance at school from a house in which a case of contagious disease is located, until after that house is fumigated, and even then the clothing worn by those persons who have been in that house should be fumigated before being worn to school.

As complete isolation of contagious diseases in private houses involves attention to detail that is almost impracticable, it is fair to assume that satisfactory isolation is rarely possible in private houses. We can, therefore, safely assume that every private house, in which there is a case of contagious disease, constitutes a focus for dissemination to the surrounding

Digitized by Google

neighborhood. Admitting this, the desirability of appropriate hospitals for the segregation of contagious diseases becomes at once apparent. Hospitals of this character should never, under any circumstances, give the impression of "pest houses." They should be attractive, conveniently located, and manned by physicians who are specially trained in the management and treatment of the diseases received in such hospitals. They should be equipped with private rooms to which private patients could be sent and treated by their own physicians if they so desire.

With the exception of smallpox, all types of acute contagious diseases could be received into such hospitals without jeopardy to the surrounding neighborhood. It is the universal opinion that smallpox should be treated away from populous centers, in isolated localities, and this opinion is borne out by an abundance of experience that points to the danger of smallpox hospitals to their immediate surroundings.

Since the majority of acute contagious diseases occur in children of the school age, their incidence may be to a very large measure controlled by the supervision of children. This is most conveniently done by the routine examination of school children. In most of our large cities, the children of the public schools are subjected to a daily medical examination, and from the reports of that work, and our own experience in Philadelphia, we are justified in believing that many serious outbreaks of scarlet fever, and diphtheria especially, are prevented by the discovery of incipient cases among children in our schools.

The armamentarium of a public health body is incomplete without facilities for the bacteriological examination of suspicious cases of sore throat, and without the means of employing diphtheria antitoxin, both as a curative and prophylactic agent. It should be possible for every physician to secure on demand, and without cost to him or his patient, this important agent against diphtheria. It should also be possible for every physician in a community to have examined bacteriologically, without cost to himself or his patient, every case of suspicious sore throat encountered by him.

For some time a plan that we have followed in the Municipal Hospital of Philadelphia has given us excellent results; namely, every child that is admitted to the hospital with sore throat gets a dose of antitoxin immediately upon admission, no matter what the diagnosis is. If, on appropriate examination, the case proves to be diphtheria, about fifteen hours have been gained in the treatment; if not, no harm has been done to the child.

During the year 1905, the incidence of scarlet fever in Philadelphia was cut down to about one half of what it had been for any year since 1900. We attribute this result to two factors; namely, the careful examination of public school children and our refusal to regard a case of scarlet fever as well, until we are sure that it is of no danger to the surrounding community.

Another problem that confronts the public health authorities is that of the control of tuberculosis. This campaign is fundamentally a campaign of education, and when the medical profession takes the trouble to explain to

Digitized by Google

the people what this all means, in simple language that can be understood by any plain man, and robs the whole subject of all mystery, that minute will the problem become a simple one.

It is needless to enter into the details of this work, as it has already been done in every magazine bearing upon public health, in this country and elsewhere.

Smallpox has existed to a greater or less extent in every city in this country. I know of no more unflattering commentary upon our intelligence than that fact. It is perhaps the most easily preventable disease of any of the serious contagious diseases with which we have to deal, and if we do not prevent it, we deserve the annoyance, inconvenience, expense, etc., that are entailed by its incidence. With a means at hand that absolutely prevents smallpox, I see no reason why any community should be saddled with the expense of maintaining hospitals for the reception of smallpox patients. Where an occasional case occurs or is imported, it could be treated in temporary quarters that could be destroyed after the case is disposed of.

In a number of localities during the past year, there has been a great deal of apprehension from the incidence of cases of epidemic cerebro-spinal meningitis. In New York City, in particular, this apprehension is well founded. In Philadelphia, we have been more fortunate. The number of cases here has been small, and we have had limited evidence of its transmission from case to case. I do not think, however, that the material seen by us in Philadelphia was sufficiently large to warrant the opinion that this disease is not transmissible, and in the light of the experience of New York City, I believe it would be for the best interest of the public health to look upon this disease as transmissible, and throw around it such safeguards as are appropriate.

There is probably no factor in connection with the public health work that is of more importance than that of the milk supply to a large community. It is needless for me to detail the possibilities of transmission through this agent, as they are doubtless familiar to all, nor is it necessary for me to invite your attention to the conditions under which the milk supply to a city is produced. I think it is a safe statement that few producers of milk are aware of the fact that no food commodity requires the same degree of expert care in its production and distribution as does milk.

The essentials to a satisfactory milk supply may be briefly summarized as follows:—

Absolute cleanliness at the source of production, including clean people, clean cattle, clean stables, and clean utensils; freedom from disease of all cattle and of all persons who are concerned in the handling of the milk; approved facilities for the cooling of the milk to the proper temperature before it is shipped, and refrigerator cars in which to ship it.

These requisites cannot be obtained by persuasion. If you agree with me that they are desirable, I will ask you to agree further with me, that they are obtainable only by authorizing those responsible for the public health to issue special licenses to all persons engaged in the milk trade, which license

Digitized by Google

may be revoked when the conditions under which the license was issued are found to have been violated by the holder.

Discussion by Dr. W. L. Havens.

I find I am a freshman. This is my first year, and while I am a freshman, I am not so "fresh" as I seem to be. I am one of those health officers who have been resurrected! In the early days in the state here I was a health officer, and then went down and out for a while, and now I am back, and trust I may be permitted to say that the old things are passed away, and new things have taken their places, and I can see wonderful changes. I am reminded of a story: A gentleman was going through a Southwestern town, and looking out he saw a number of poor buildings,—one a saloon, another a saloon, and another a Chinese laundry. Over the door of one of the saloons was the legend: "Open all night; we never close up." Over the laundry, in big scrawly letters, were the words, "We wide awake, too." It seems to me the health department of Vermont has caught that chord.

I have n't very much to say, and I feel very much as my little boy did, when a few weeks ago he was trying to learn to play a harmonica, and I said to him, "You 'll have to get some one to teach you." He said, "Well, pa, there is n't much teach to it, it 's most all learn," and that is the case here.

But it seems to me the most important thing for us to keep in mind is, first, that publicity is important—and we have heard a good deal about publicity in all these meetings. It is important to have the people of our towns understand that these conditions are important and should be brought to the attention of the health officer. I believe we can do that; I believe we can reach the people through our local boards; I believe we can reach them, too, through the town meetings. It is obligatory that we present a report of our work at the town meeting; get before them and tell the people just what the Health Board expects of them. We should find coöperation that we do not get to-day. Of course you will find objection to it, too.

In regard to epidemics of measles and German measles, I think we have had a good many cases which have been so slight that the people have n't known what they had. Now I think if they can be made to understand that these are the cases that spread the disease, it would be well. Publicity and the early diagnosis are important; they are of vast importance. I realized that two weeks ago, just because I did n't diagnose a case of scarlet fever; the disease got me before I was on the alert. You must try to diagnose doubtful cases, questionable cases, and then, after you have diagnosed the case, quarantine it; that part is very important, too.

Of course the best of us will meet with objections as we go along, but we must build up a sentiment in favor of the work. We must emphasize particularly to our people the setting apart of some room in the house for a sick room, which may ordinarily be used for ordinary means, and so arranged that it can be easily adapted for a quarantine room, having only hard white walls, light curtains, etc., and no draperies or other things not abso-

Digitized by Google

lutely necessary. In our little towns, where a family are not able to devote themselves exclusively to the patient, or where they cannot set a nurse aside to devote her whole time to taking care of them, I think we might call the town in to provide them, so that the quarantine might be maintained.

I have always taken special pains about changing my clothes before going into a room or house in which there is contagious disease. Years ago I had a white duck suit, light trousers and coat and cap, which I always put on before going into a room. One of my patients said to me once, "Doctor, are you on a yachting excursion?"

We have a good many of the mixed cases in our country practice. It is important to examine the school children for the possibility of contagious diseases, and for eye and ear troubles, which we are taking action about.

I heard the talk of Professor Abbott, and would ask (if I might be permitted to show my ignorance) how they perform the lumbar puncture.

Dr. Campbell.

I would like to ask Professor Abbott a question. He said that in any case of sore throat we should at once give a dose of antitoxin. How large a dose would he advise in such a case, where diagnosis of diphtheria had not been made—simply an ordinary sore throat? Would he advise that a culture be sent immediately for bacteriological examination before quarantining? What would be the minute dose for the other members of the family?

Then in regard to scarlet fever. I have found a great many cases of scarlet fever where there are discharges from the ears for a long time, sometimes six months or a year. If you should keep the patient in continued quarantine all that time, it would seem pretty hard. I would like to hear what he has to say in respect to this.

Dr. Kelley.

In reference to the method of making the lumbar puncture, I will tell you the way I do it, which I think is the way everybody does it; it is no trouble at all. Some of the reports suggest the sitting up of the patient, but I get the best results by having the patient rest on his or her side. Pull the knees up as far as can conveniently be done.

In the first place, the needle can in no case be too long. The ordinary needles are altogether too short; they should be at least three inches long. You should introduce the needle one-half inch above or below the fourth vertebra; the first thing you encounter is a small piece of fiber, but the needle slides in with no trouble at all. Indeed, the thing that surprises one is the ease with which the operation is done.

You should allow the fluid to flow into the needle eight or ten times. I have been in the habit of allowing the fluid to flow as long as it will, and in a case of spinal meningitis the withdrawal of this amount of fluid does a great deal of good.

The great difficulty in the operation is the doing it the first time. And let me also suggest to you, don't have a needle that is clogged by rust.

Digitized by Google

More than once I was sure the needle was in the proper canal, but no fluid was withdrawn; withdrawal of the needle showed the fact that the needle was clogged with rust. Thank you again for listening to me.

Dr. Bryant.

I want to say a few words about the necessity of wearing some sort of a robe into the room in infectious diseases. Last spring we had a number of cases of scarlet fever in our town, and I had been in the habit of going into the woodshed and putting on a long linen duster which I kept for that special purpose before entering the sick room; when I came out I had only to roll it up and put it in a bag, sprinkling over it three or four drachms of formaline. The next time you put such a garment on you will have no doubts as to the efficacy and practical usefulness of the treatment.

On one occasion I was called in to see a child of one of those nice, nervous women, while on my way back from making a call on a scarlet fever patient. She said: "I hear one of those Thompson girls is sick with scarlet fever; how is she?" I said, "Well, she 's better." She said: "You have n't seen her lately; have you been there to-day?" "Well, yes," I said, "I was there this morning; but I always put on a robe and cap." She said, "Oh, I feel so relieved!" She had reason to feel relieved, for I remember years ago I brought scarlatina home to my own children.

Mr. Moore.

I heartily endorse what has been said about the necessity of physicians wearing robes. It is positively necessary in contagious diseases. No longer ago than last Monday morning I quarantined a case of scarlet fever. The doctor who had charge of the case came along, and said, "I 'll wait and take you home." He took no precaution whatever; we got right into a case of scarlet fever, and it is going to be serious. I do not find that the case with Dr. Caverly, but some of our physicians are absolutely careless in that respect. It seems to me we ought to have a little consideration for other people. We should have instruction along that line that we can give to physicians. It seems as if it should be unnecessary, but I find it *is* necessary in our town.

Dr. Goodale.

In the case of contagious diseases, I have told the family how a quarantine should be kept, and how they should take care of things, and frequently they pay but very little attention. I had been in the habit of putting on a robe before entering the room, and after I had been to the trouble two or three days, one member of the family said to me, "Doctor, you do really believe all that about germs?" I said: "Why, certainly; do you think I would be taking all this trouble if I did n't?" After that I saw a great change in their way of taking care of themselves and things about the place.

Digitized by Google

Dr. Clark, Burlington.

I have a robe to put on, which I carry in a valise, putting formaldehyde over the robe in the valise to fumigate it when not in use. You don't usually take off your shoes when you go into a sick room, and I believe that germs are taken up by your shoes; so I take along a pair of light rubbers, and they can be put into the valise and disinfected at the same time with the robe.

I wish that a record or records might be kept, whereby we may know the location of disease and the number of cases, and make special investigation where disease is frequently recurring in any one locality. It is of the utmost importance to the health officer to know that fact, that he may know definitely at any time just the condition of affairs in his jurisdiction. I believe these things are very important.

Dr. Clark, Castleton.

I was called upon on the 30th day of April last to do some justice work in the extreme southern part of the town, and I found that whooping cough had been prevailing there for several weeks. No physician had been in attendance; all the patients were convalescent. I was so discouraged that I did n't even report to the State Board of Health the condition of things. The disease had run its course. I wish the State Board of Health would help to educate the people to a proper understanding of what they should do in these matters.

I, too, think instruction would be beneficial. I had a case down in Bennington county, some fifteen years ago. We had at that time a little scarlet fever; we had, I presume, a hundred cases of measles, and any quantity of whooping cough. I was called up to Sunderland to attend a confinement case, and on the way the man told me that they had measles in the house. I had no reason to suspect anything else. Before I got into the house, the man had gone in and carried away out of the room where the mother was sick a little child. I stayed there in that room until morning, lying down on that couch some part of the time. Before I went away the next morning this child was brought out, and I found that it was desquamating from head to foot with scarlet fever. It was blotched up almost beyond recognition, and the father said it was a case of measles!

Well, I had children at home; I had a number of people on the road that morning who expected me to call. As I went down the road, driving fast, people shouted at me, and wondered why I went by. I drove my horse into the back yard; my two children came out to meet me; I sent them in, saying, "Send your mother out here." I called to her to get me hot water and carbolic acid, and I took off all my garments, one at a time and brushed them, inside and out, even to my shirt. I did n't bring any scarlet fever home, and I did n't have it myself; I 've wondered a great many times why I did n't.

Digitized by Google

Dr. Rice.

Down in our town we had an epidemic of measles. We had about seventy-five scholars there in the school, and very few of them had had measles. The doctor advised closing the schools. At first I decided not to let the children go home; but they went home and spread the disease. Now, I would like to know if it is the duty of the health officer to send the children home, or can they be kept in the town where they contract the disease?

Dr. White.

This is a very interesting subject. Not only in cases of scarlet fever, but in typhoid, I think it would be a great benefit to the health officers, and the profession at large throughout the state, if people in general understood more about these diseases. There are certain people among the laity who feel that every physician should be able on first sight to make an absolutely correct diagnosis of these cases, and in many cases censure him because he fails to make a diagnosis for several days after the first visit. I have in our section endeavored to explain to people, when such criticisms are made, that in some of our larger hospitals they require from eight to ten days in some cases of typhoid fever in which to make a diagnosis. It will be a great help on returning home to be able to quote such authority as Dr. Abbott in this direction.

Dr. Whitaker.

We have in our section a mixed population; some come from the Canadian side, some from other sections where smallpox in modified form is not objected to as a regular diet; and scarlet fever, measles, and whooping cough—why, they never think of calling in a physician for them! That is why a great many cases are never reported. No physician is called; the parents care for the children themselves.

I think that measles is, many times, one of the most dangerous diseases we have to deal with; not because of the dangers attending the immediate outbreak, but because of the consequences which come later on. How many times a doctor has seen a case of tuberculosis that he was able to trace directly to an attack of measles!

Dr. Ellis.

Some people here thought that the State Board of Health ought to enlighten the people in regard to these questions. I have just had an experience in our town that has enlightened some people, without the aid of the State Board. Along last winter we had an outbreak of scarlet fever; although it was very mild, there were several cases, and there was no eruption whatever. In one family, the man was running the creamery and his child was taken sick at its grandmother's house. I placed the child and its mother and grandmother in a house, and isolated it, disinfected the

Digitized by Google

other house, and placed the father there, so that he could keep on running the creamery. Several weeks elapsed, the house was quarantined, with the family maintaining all the time that it was not scarlet fever, and blaming the doctor for saying it was. One morning the man appeared at my office, a sick man, and with all the initiatory symptoms of scarlet fever. I sent him home and isolated the case, and told him to remain in the house. He was one of the sickest men I ever saw for sixteen hours—he could n't swallow. As soon as he got a little better, he said, "Doctor, I have had scarlet fever, and all the rest of them have had it, too." I don't think they 'll kick on quarantining again!

Dr. Abbott.

Dr. Kelley has answered the question concerning the lumbar puncture, and I trust you will accept his reply. He answered the question much better than I could have done.

Concerning diphtheria antitoxin, I think it is not advisable for therapeutic purposes to use less than 1,500 units; nor less than 600 for prophylactic purposes.

Question.

Would you advise, in the case of a sore throat, the doctor first giving an injection of antitoxin, and then making an examination?

Answer.

Yes.

Question.

When would you quarantine?

Answer.

When the diagnosis is made I would placard.

Question.

If it is negative the first time?

Answer.

I would n't quarantine until I got positive results.

Dr. Holton.

I would like to ask Dr. Abbott how much isolation he practices in regard to measles and German measles.

Question.

Mr. President: I would like to ask what Dr. Abbott's experience has been with formaline, and how he would advise me to use it in disinfecting rooms.

Digitized by Google

Answer.

Use it in a spray.

Question.

I would like to ask the name of the apparatus used in spraying, and the expense of the same.

Dr. Caverly.

Dr. Holton has just asked the question that I had in mind to ask, and it is certainly a rather embarrassing question for the State Board of Health, *i. e.*, the management of measles, whooping cough, and German measles.

I have had occasion within the last six or eight months to look up statistics of these diseases, comparing them with scarlet fever, and the number of deaths from measles and whooping cough is greater than the number of deaths from scarlet fever. That is the situation in Vermont; it is so in most of the New England States and in this country. The number of deaths from these diseases is becoming greater than those from diphtheria. These diseases are altogether more important than most officials are likely to consider them, and the curtailment of them is not considered sufficiently by either the profession or the laity. In fact, it is quite the rule among the laity to find the opinion prevailing that the average man or woman is not properly brought up or educated until he or she has had all of these diseases. Now, I think that is a very erroneous idea.

They are particularly embarrassing diseases, because of the difficulty of making an early diagnosis, and it is almost impossible to make a sufficiently early diagnosis of either measles or whooping cough to prevent their spreading. In measles, we do have spots on the inside of the cheek which furnish us with a clue to diagnosis, but prior to their appearance the whole schoolroom may be infected. In whooping cough, we have not even as good a guide as that. When there is whooping cough in the community, a cough is suspicious; but when there is none, when it is the first that comes, it may infect a whole schoolroom of children before anybody recognizes it. The family, as well as the patient, is usually innocent. It should be remembered that the *cough* is common to both measles and whooping cough.

It was stated yesterday in discussion that this matter of controlling disease in the school furnishes the only clue to controlling the diseases themselves.

You know the State Board of Health in their modified quarantine, which is a part of the regulations of the Board, always required that these diseases should be isolated, and those who had not had them should be kept from entering such premises. The Board have been reluctantly compelled to acknowledge that this rule was impracticable of enforcement, though we have held on to it for a number of years, in spite of the frequent disregard of the regulation. We have recently, as most of you know, modified that modified quarantine, and we now require that children and those who have not

Digitized by Google

had the disease in a family be kept from places of public resort, theaters, and all other public places where children are liable to congregate. I think if that can be enforced there can be no excuse for such a wave of measles, whooping cough, and German measles as has been sweeping over the state this last spring. It is very discouraging for health officials to hear such remarks as these about the prevalence of these diseases: "It is impossible to keep track of them"; "the doctors do not report these cases"; "we have had a general outbreak, number of cases uncertain"; "they come so thick and fast that they cannot be kept track of."

These three diseases, German measles, measles, and whooping cough, are really more important just now than diphtheria, scarlet fever, and smallpox. We can take care of these latter diseases. Until we know more about the causes of the former, and the public is better informed about their intrinsic danger, they are bound to prove troublesome to the health officer.

Dr. Abbott.

The matter of ear trouble after scarlet fever is being taken more seriously than formerly, and there is some reason to think that this is one of the important channels of transmission. We can scarcely undertake to isolate children having ear trouble from scarlet fever until all discharge has ceased; some of them would be isolated all their lives. I think that for at least a month or six weeks the child should be kept away from other children in so far as it is possible to do so.

In regard to the isolation of measles, I think measles should be isolated. The act of the assembly of 1895, authorizing us to isolate certain diseases, is very specific as to what we may do, and measles is not specified, consequently we cannot take that matter up. I do not believe the people are yet ready for isolation of measles; nor will they be until properly educated by the physicians having charge of them.

I know of no more influential man in a community than the family doctor. I believe if the family doctor will conscientiously talk with a patient, and tell him how public opinion is going, and take a little time with these people, we will see good results.

Concerning the using of the formaldehyde spray, we use equal parts of water and formaline, and spray in the proportion of three (3) pints of this mixture to 1,000 cubic feet of air space to be disinfected, giving special attention to horizontal surfaces and to objects that were in close proximity to the patient.

Our regulations require all medical inspectors and disinfectors on visiting houses where contagious disease has been to wear a clean cotton cap and gown and rubber overshoes. After using them they are placed in a bag and one-half ounce of formaline sprinkled over them. The bag—usually of leather—is then closed.

By an act of the assembly of 1895, we are directed to exclude every child from school for thirty days after its recovery from scarlet fever. When a child is perfectly free from desquamation and has no ear discharge, it seems

Digitized by Google

to me illogical to keep the child away from school. The child should on recovery be treated to antiseptic baths, and the house thoroughly disinfected. I don't think it is necessary to keep a child out of school for a specified time. *Keep it out until it is safe for it to go back.*

REPORT MADE TO THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE, MAY 23, 1906.

During the past year there has not been any new public health legislation, as our legislature meets biennally, and 1905 was an off year. The pure food law enacted has been in force since March, 1905. It was provided that the execution of this law should be by the State Board of Health. As the act did not provide any funds for its execution, our Board has been much hampered in this line of work.

We have, however, examined in the twelve months 411 specimens of various kinds, and of these, 172 failed to comply with the law.

We expect the next legislature will give an adequate appropriation for this work. Under an act putting all streams and other bodies of water under the control of the State Board of Health, in May, 1905, in the case of two cities and three villages, where water supplies were polluted by sewage, as a result of which typhoid fever and diarrhœal diseases were continuously present in the families using these waters, a warning notice was served that they must procure a supply of pure water approved by the Board on or before June 1, 1906. If they failed so to do, we should then prohibit the use of their polluted supply under the penalty of the law. One village has provided pure spring water, and 90 per cent of the families are now using it. Another has a supply unpolluted which they can use.

The others have plans for securing pure water as soon as they can get necessary legislation to enable them to legally provide the money for this purpose. The usual routine work of the Board has been carried out as usual.

The last legislature passed an act providing for the examination of the eyes and ears of the children of the public schools. The first examination took place September last. In conjunction with the superintendent of education, charts for this purpose and instruction to the teachers were prepared and sent to every school, directing how these examinations should be conducted in all grades except the very youngest. The result of examinations showed that of 44,573 pupils 33 per cent were defective in either sight or hearing.

The Quarterly Bulletin, each number of which contained sixty pages, has been regularly issued, and 10,000 copies distributed to the people of the state. An attempt has been made to gather statistics regarding the preva-

Digitized by Google

lence of both syphilis and gonorrhea in the state. The result cannot be stated at this time.

Our annual school for instruction of our health officers was held in June, as usual, and more than two thirds of our 240 local health officers were present, besides others, including physicians and laymen. We are pleased to acknowledge the support of the people of the state and the press, which has been uniformly extended to the Board in all the departments of its work.

Respectfully submitted in behalf of the Board,

HENRY D. HOLTON, Secretary.

MILK.

Samples of milk have been purchased by local health officers as it was being delivered to customers. The following shows the result of examination at the laboratory. In no instance was the bacilli of tuberculosis found. To meet the requirements of standard of milk, clean, free from foreign substances, it must contain not less than twelve per cent of total solids, and not less than 8.5 per cent solids not fat, nor less than three and one-fourth per cent of milk fat. If skimmed or blended it should be so labeled. Milk from cows fifteen days before calving or four or five days after calving should be excluded. Other samples are being collected and will be reported in next Bulletin.

In those cases where inflammatory products were found, either one or more cows were suffering from some disease, from injury to the udder or their milk had been mixed with the milk of the herd too near the time of calving. A competent veterinary would, on examination of the herd, determine which cows were the cause of this pollution. They should be removed from the herd and their milk should not be added to the milk to be placed on the market. Care, cleanliness, both of the stable and the herd, as well as the milkers and all utensils, will prevent the adulteration with dirt. This will be considered a sufficient notice to all persons offering milk for sale that it must conform to the standard fixed by law; further that it must not be polluted by dirt or in any other way.

Digitized by Google

MILK—STANDARD OR ABOVE.

Lab. No.	Where Sold.	Name of Seller.	Total Solids.	Fat.	Solids Not Fat.	Microscopically—Remarks.
40611	Barre	*	13.51	5.	8.5	Normal
39616	Bennington	Lafayette Rendall	14.10	5.	9.1	"
39618	"	C. H. Mattison	12.81	4.	8.8	"
39622	"	F. E. Moon	12 82	3.8	9.0	"
39623	"	J. B. Parsons	13 08	4.	9.1	"
39624	"	R. A. Crawford	13.56	4.2	9 4	"
39625	"	P. Jacobs	13.15	4.	9.2	"
39627	"	J. A. Flynn	12.84	3.4	8.9	"
39631	"	J. G. McCullogh	13.79	4.6	9.2	"
39632	"	F. B. Jennings	14.78	5.	9.8	"
40622	"	Wm. C. Robinson	12.24	3.6	8.6	"
39768	Brattleboro	Randall	15.42	5.6	9.8	"
39770	"	Gallup	13.36	4.4	9.0	"
39771	"	H. H. Winchester	14.12	5.	9.1	"
39774	"	C. C. Winchester	14.26	5.	9.3	"
39775	"	H. G. Smith	13.56	4.4	9.2	"
39776	"	Whitney	13.42	4.4	9.0	"
39839	"	Grover	12.66	3.8	8.9	"
39962	"	Mather	13.36	.....	.....	"
39977	"	C. A. Barber	12.96	.....	.....	"
39226	Burlington	*	13.76	.....	.....	"
37946	"	*	.....	36.	.....	Cream—Legal Standard
40780	Colchester	*	12.57	3.8	8 8	Normal
40.70	Fairfield	*	.....	28.8	.....	Cream
.....	Fort Ethan Allen	C. Robbins	13.57	3.8	9.8	Normal
39.84	Newport	L. F. Kay	14.38	5.2	9.2	"
38889	Northfield	Rice	13.92	.....	.....	"
39410	Montpelier	Bingham Marvin	13.68	4.4	9.3	"
39411	"	Crescent Cream'y	12.72	4	8.7	"
39415	"	Hosea Brown	14.14	4.6	9.5	"
39429	"	E. S. Kingsbury	.....	4.	.....	"
39440	"	Leland Farm	.....	3.6	.....	"
40611	Rutland	Novak Bros.	12.06	3.4	8.7	"
40612	"	Rutland Cream'y	12.08	3.6	8.5	"
40617	"	F. G. Hart	12.81	4.	8.8	"
406 9	"	Temple Bros.	13.40	4.4	9.0	"
40620	"	A. H. Canalish	13.66	4.7	9.0	"
40623	"	C. P. Hebee	12.32	3.8	8.5	"
40626	"	J. C. Dunn Estate	12.67	4.2	8.5	"
40705	St. Albans	E. A. Warner	13.55	4.4	9.1	"
40707	"	F. Z. Campbell	12.84	3.6	9.2	"
40708	"	J. W. Warner	13.67	4.5	9.2	"
40710	"	R. A. Warner	15.48	6.	9.5	"
40711	"	J. A. Warner	.....	39.	.....	Cream
39950	St. Johnsbury	Frank Hastings	13.40	4.	9.4	Normal
39951	"	William Wright	14.16	5.	9.2	"
39960	"	J. L. Grady	13.68	4.6	9.3	"
38705	Windsor	J. D. Brewster	14.38	5.4	9.0	"
3.092	Woodstock	Wallace	13.72	4.6	9.1	"
39094	"	Westerdale Williams	14.98	5.	9.9	"
39096	"	George Lockwood	15.20	5.2	10.0	.....
39147	"	*	.....	18.7	.....	Cream

*Submitted by consumer. Dealer's name not given.

Digitized by Google

MILK THAT DOES NOT COMPLY WITH THE LAW.

Lab No.	Where Sold.	Name of Seller.	Total Solids.	Fats.	Solids Not Fat.	Microscopically—Remarks.
39910	Barton	W. Hubbard	14.82	5.	9.8	Inflammatory products (pus)
40436	Barre	Dodge	13.18	4.3	8.9	Extraneous matter (dirt)
40437	"	"	13.30	4.4	8.9	Extraneous matter (dirt)
40438	"	"	11.88	3.6	8.2	Solids low, otherwise normal
40439	"	"	12.57	3.8	8.8	Inflammatory products (pus and streptococci), and extraneous matter (dirt)
40440	"	"	12.19	3.9	8.3	Normal
40441	"	"	13.78	4.8	9.0	Extraneous matter (dirt)
40442	"	"	13.43	4.3	9.1	Extraneous matter (dirt)
40443	"	C. Pearsons	13.28	4.6	8.7	Extraneous matter (dirt)
40444	"	"	13.18	4.1	9.1	Extraneous matter (dirt), and inflammatory products (streptococci)
40445	"	"	13.30	4.4	8.9	Extraneous matter (dirt), and inflammatory products (streptococci)
40446	"	"	13.54	4.6	8.9	Inflammatory products (streptococci)
40447	"	"	12.58	3.6	9.0	Inflammatory products (streptococci)
40448	"	"	14.76	5.4	9.4	Extraneous matter (dirt)
40449	"	"	13.04	4.4	8.6	Extraneous matter (dirt), and inflammatory products (pus)
40450	"	"	14.27	5.	9.3	Extraneous matter (dirt)
40451	"	"	14.75	5.6	9.1	Extraneous matter (dirt)
40452	"	"	13.05	4.2	8.8	Extraneous matter (dirt)
40454	"	*	13.06	4.	9.1	Extraneous matter (dirt)
40453	"	*	9.68	0.4	9.3	Extraneous matter (dirt) Quality deficient
40810	"	F. Pearsons	14.	5.4	8.6	Inflammatory products (pus and streptococci)
40812	"	"	12.81	4.	8.8	Inflammatory products (streptococci)
40813	"	"	13.05	4.2	8.8	Inflammatory products (streptococci)
40814	"	"	12.79	4.4	8.4	Normal
40815	"	.....	13 30	4.4	8.9	Extraneous matter (dirt)
39617	Bennington	W. E. Mattison	11.40	3.2	8.2	Quality deficient. Inflammatory products (pus), and extraneous matter (dirt)
39619	"	J. W. Rockwood	12.57	3.8	8.8	Inflammatory products (pus)
39620	"	Edw. Bushnell	12.15	4.	8 2	Normal
39621	"	Martin Cone	14.12	5.	9.1	Extraneous matter (dirt)
39625	"	Wm. Hicks	12.82	3.8	9.0	Extraneous matter (dirt)
39628	"	J. C. Colgate	14.52	5.	9.5	Inflammatory products (pus and streptococci)
39629	"	Hiland Fay	11.60	3.	8.6	Quality deficient. Inflammatory products (pus)
39630	"	Seymour C. Van	11.96	3.2	8.8	Quality deficient
39702	"	J Colgate	13.70	4.4	9.3	Inflammatory products (pus)
40033	"	J. W. Rockwood	12.96	4.2	8 8	Inflammatory products (pus)
40034	"	W. M. Hicks	13.54	4.4	9.2	Inflammatory products (pus)
40035	"	W. E. Mattison	13.44	4.2	.....	Inflammatory products (pus and streptococci), and extraneous matter (dirt)
39767	Brattleboro	L. A. Howard	13.64	4.4	9.2	Inflammatory products (pus), and extraneous matter (dirt)
39769	"	White	12.66	3.8	8.9	Inflammatory products (pus), and extraneous matter (dirt)
39772	"	H. M. Barrett	14.44	5.	9.4	Extraneous matter (dirt)
39773	"	Dunklee	13.04	4.1	8 9	Extraneous matter (dirt)
39777	"	Torrey	12.54	4.3	8.2	Extraneous matter (dirt)
39887	"	Robbins	13.12	4.2	8 9	Inflammatory products (pus)
39888	"	Hunt	14.56	5.2	9 4	Extraneous matter (dirt)
40095	"	C. A. Barber	12.96	3.6	9.4	Inflammatory products (pus)
40097	"	C. A. Barber	13.14	3.6	9.5	Extraneous matter (dirt)

*Submitted by consumer. Dealer's name not given.

Digitized by Google

MILK THAT DOES NOT COMPLY WITH THE LAW (CONTINUED).

Lab. No.	Where Sold.	Name of Seller.	Total Solids.	Fats.	Solids Not Fat.	Microscopically—Remarks.
40006	Brattleboro	A. Barber	12.06	3.4	8.7	Extraneous matter (dirt)
39614	Burlington	*	11.98	2.4	9.6	Quality deficient. Inflammatory products (streptococci), and extraneous matter (dirt)
39965	So. Burlington	E. W. Butler—G	13.12	4.5	8.6	Inflammatory products (pus)
39966	"	E. W. Butler—S	13.44	4.4	9.0	Inflammatory products (pus and streptococci)
40071	Middlebury	J. A. Brown	12.8	4.	8.8	Extraneous matter (dirt)
40072	"	G. S Bliss	14.62	4.8	9.8	Extraneous matter (dirt)
40073	"	Dr. Kears	13.48	4.4	9.1	Extraneous matter (dirt)
39412	Montpelier	G. O. Hall	13.18	4.	9.2	Inflammatory products (pus), and extraneous matter (dirt)
39413	"	G. R. Lawrence	14.90	5.2	9.7	Inflammatory products (pus)
39414	"	Mr. Bliss	12.38	3.6	8.8	Extraneous matter (dirt)
39416	"	Walker Farr	13.54	4.2	9.3	Inflammatory products (pus and streptococci), and extraneous matter (dirt)
39441	"	Mr. Hayden	.....	4.6	.....	Extraneous matter (dirt)
39502	New Haven	*	.....	.....	.....	Inflammatory products (pus)
39495	"	.....	.....	.....	.....	Inflammatory products (pus)
39980	Newport	Fred Wilson	13.38	4.6	8.8	Inflammatory products (pus)
39925	"	L. F. K.	13.72	4.6	9.1	Inflammatory products (streptococci)
39838	Northfield	Fowler	13.94	.....	.....	Inflammatory products
39840	"	Houston	13.40	.....	.....	Inflammatory products
40682	Randolph	Currier	12.34	3.7	8.6	Extraneous matter (dirt)
40683	"	R. A. Smith	13.28	4.3	9.0	Extraneous matter
40614	Rutland	Ray F. Russell	10.87	2.6	8.3	Quality deficient. Inflammatory products (pus), and extraneous matter (dirt)
40615	"	Mead Farm	11.86	3.	8.9	Quality deficient
40616	"	Cloverly Farm	12.70	3.8	8.9	Extraneous matter (dirt)
40613	"	Mark's Creamery	11.47	3.3	8.2	Inflammatory products (streptococci) Total solids low.
40618	"	G. A. Davis	12.08	3.6	8.5	Inflammatory products (pus.)
40621	"	Ladabouche Farm	12.20	3.6	8.6	Inflammatory products (pus)
40622	"	Lewis Avery	11.59	3.4	8.2	Total solids low
40624	"	Maple Grove Farm	14.53	5.3	9.2	Inflammatory products (pus and streptococci)
40625	"	Frost Creamery	12.70	4.	8.7	Inflammatory products (pus and streptococci)
39804	W. Rutland	L. M. Walker	11.58	5.2	6.4	Inflammatory products. Total solids low.
40706	St. Albans	E. H. Brooks	13.55	4.4	9.1	Inflammatory products (pus)
40709	"	R. Warner	12.47	3.2	9.3	Extraneous matter (dirt)
39951	St. Johnsbury	Hastings White	12 76	4.6	8.2	Extraneous matter (dirt), and inflammatory products
39952	"	Harry Scott	14.10	4.6	9.5	Inflammatory products (pus)
39953	"	Bert Staples.	13.64	4.4	9.2	Extraneous matter (dirt)
39954	"	Harvey Bros.	13.58	4.4	9.2	Inflammatory products (pus), and extraneous matter (dirt)
39955	"	Warren Wright	16.18	6.4	9.8	Inflammatory products (pus), and extraneous matter (dirt)
39956	"	Roy Taft	13.64	4.6	9.0	Inflammatory products (pus), and extraneous matter (dirt)
39957	"	H. N. Penniman	14.84	5.7	9.1	Inflammatory products (pus), and extraneous matter (dirt)
39093	Woodstock	David Knowlton	16.44	7.3	9.1	Inflammatory products (pus), and extraneous matter (dirt)
39095	"	Case	15.54	5.6	9 9	Extraneous matter (dirt)
39097	"	Harthorn	12.	3.8	8 2	Normal
		Carl Harthorn	15.92	5.8	10.1	Extraneous matter (dirt)

*Submitted by consumer. Dealer's name not given.

Digitized by Google

MAPLE GOODS.

Lab. No.	Maker.	Where Sold.	% Total Ash.	% Insoluble Ash.	Remarks.
*38837	.....	Northfield	.16	.02	Adulterated
*39000	Towles Log Cabin Brand, Towle Maple Sugar Co., St. Paul, Minn.	Fairfax	.50	.04	"
*39687	.....	Johnson	.52	.18	Pure
*39641	.....	Swanton	.60	.28	"
*40250	W. Kimball, Westford	Burlington	.42	.06	Adulterated
40118	†	Brattleboro	.88	.32	Pure
40119	†	"	.98	.55	"
40120	†	"	1.05	.51	"
40121	†	"	.98	.45	"
40122	†	"	.83	.35	"
*40208	†	Barre	.56	.24	"

*Syrup. †Submitted by consumer. Name not given.

MISCELLANEOUS GOODS.

Lab. No.	Article.	Maker.	Where Sold.	Quality.	Remarks.
37250	Detanated Coffee	Clark, Coggin & Johnson Co., Boston, Mass.	Brattleboro	Standard	.....
38786	Standard Oysters	J. H. Wainwright & Sons	Rutland	"	Not preserved
38368	Sausage	Cheri Lugi, Hardwick	Hardwick	Below stan'd	Contained Trichinæ
38594	Olive Oil	Los Angeles Olive Growers' Ass'n	Brattleboro	Standard	.....
38595	"	Barton & Guistier, France	"	"	.....
38923	Eye Wash	.....	Burlington	Below stan'd	Contains lead
38743	Flour (Wheat)	.....	Montpelier	Standard	.....
38986	" "	.....	St. Johnsbury	"	.....
38984	Chewing Gum	.....	Randolph	"	.....
38600	Postum Cereal	Postum Cereal Co., Battle Cr'k, Mich	Brattleboro	Below stan'd	.....
38601	Old Grist Mill Cereal Coffee	Potter Wrightington, Boston	"	"	.....
39825	Pink Stick Candy	Geo. H. Cross Co.	St. Johnsbury	Standard	.....
40 06	Candy	Wing Bros. & Hartt, Albany, N. Y.	Burlington	"	.....
40075	"	*	So. Fairlee	"	
39972	Gluten Grits	Farrell & Rhino, Watertown, N.Y.	Rutland	Below stan'd	Total carbohydrates, 71%
39973	Gluten Flour	Farrell & Rhino Watertown, N Y.	"	"	Total carbohydrates, 67%

*Submitted by consumer. Name of maker not given.

Digitized by Google

FIFTY DAIRY RULES.*

These Will, if Observed, Insure Clean Milk.

The Owner and His Helpers.

1. Read current dairy literature and keep posted on new ideas.
2. Observe and enforce the utmost cleanliness about the cattle, their attendants, the stable, the dairy, and all utensils.
3. A person suffering from any disease, or who has been exposed to a contagious disease, must remain away from the cows and the milk.

The Stable.

4. Keep dairy cattle in a room or building by themselves. It is preferable to have no cellar below and no storage loft above.
5. Stables should be well ventilated, lighted and drained; should have tight floors and walls, and be plainly constructed.
6. Never use musty or dirty litter.
7. Allow no strong smelling material in the stable for any length of time. Store the manure under cover outside the cow stable, and remove it to a distance as often as practicable.
8. Whitewash the stable once or twice a year. Use land plaster in the manure gutters daily.
9. Use no dry, dusty feed just previous to milking; if fodder is dusty, sprinkle it before it is fed.
10. Clean and thoroughly air the stable before milking. In hot weather sprinkle the floor.
11. Keep the stable and dairy room in good condition, and then insist that the dairy, factory, or place where the milk goes be kept equally well.

The Cows.

12. Have the herd examined at least twice a year by a skilled veterinarian.
13. Promptly remove from the herd any animal suspected of being in bad health and reject her milk. Never add an animal to the herd until certain it is free from disease, especially tuberculosis.
14. Do not move cows faster than a comfortable walk while on the way to place of milking or feeding.
15. Never allow the cows to be excited by hard driving, abuse, loud talking, or unnecessary disturbance; do not expose them to cold or storm.
16. Do not change the feed suddenly.
17. Feed liberally, and use only fresh, palatable feed-stuffs; in no case should decomposed or mouldy material be used.
18. Provide water in abundance, easy of access, and always pure; fresh, but not too cold.

*Report of the Bureau of Animal Industry, 1898.

Digitized by Google

19. Salt should always be accessible.

20. Do not allow any strong flavored food, like garlic, cabbage, and turnips, to be eaten, except immediately after milking.

21. Clean the entire body of the cow daily. If the hair in the region of the udder is not easily kept clean, it should be clipped.

22. Do not use the milk within twenty days before calving, nor within three to five days afterward.

MILKING.

23. The milker should be clean in all respects; he should not use tobacco; he should wash and dry his hands just before milking.

24. The milker should wear a clean outer garment; used only when milking, and kept in a clean place at other times.

25. Brush the udder and surrounding parts just before milking, and wipe them with a clean, damp cloth or sponge.

26. Milk quietly, quickly, cleanly, and thoroughly. Cows do not like unnecessary noise or delay. Commence milking at exactly the same hour every morning and evening, and milk the cows in the same order.

27. Throw away (but not on floor, better in the gutter) the first few streams from each teat; this milk is very watery and of little value, and it may injure the rest.

28. If in any milking a part of the milk is bloody or stringy or unnatural in appearance, the whole mess should be rejected.

29. Milk with dry hands; never allow the hands to come in contact with the milk.

30. Do not allow dogs, cats, or loafers to be around at milking time.

31. If any accident occurs by which a pail full or partly full of milk becomes dirty, do not try to remedy this by straining, but reject all this milk and rinse the pail.

32. Weigh and record the milk given by each cow, and take a sample morning and night, at least once a week, for testing by the fat test.

CARE OF MILK.

33. Remove the milk of every cow at once from the stable to a clean, dry room, where the air is pure and sweet. Do not allow cans to remain in stables while they are being filled.

34. Strain the milk through a metal gauze and a flannel cloth or layer of cotton as soon as it is drawn.

35. Aerate and cool the milk as soon as strained. If an apparatus for airing and cooling at the same time is not at hand, the milk should be aired first. This must be done in pure air, and it should then be cooled to 45° F. if the milk is for shipment, or to 60° F. if for home use or delivery to a factory.

36. Never close a can containing warm milk, which has not been aerated

Digitized by Google

37. If cover is left off the can, a piece of cloth or mosquito netting should be used to keep out insects.

38. If milk is stored, it should be held in tanks of fresh, cold water (renewed daily), in a clean, dry, cold room. Unless it is desired to remove cream, it should be stirred with a tin stirrer often enough to prevent forming a thick cream layer.

39. Keep the night milk under shelter, so that rain cannot get into the cans. In warm weather hold it in a tank of fresh cold water.

40. Never mix fresh warm milk with that which has been cooled.

41. Do not allow the milk to freeze.

42. Under no circumstances should anything be added to milk to prevent its souring. Cleanliness and cold are the only preventatives needed.

43. All milk should be in good condition when delivered. This may make it necessary to deliver twice a day during the hottest weather.

44. When cans are hauled far they should be full, and carried in a spring wagon.

45. In hot weather cover the cans, when moved in a wagon, with a clean wet blanket or canvas.

THE UTENSILS.

46. Milk utensils for farm use should be made of metal, and have all joints smoothly soldered. Never allow utensils to become rusty or rough inside.

47. Do not haul waste products back to the farm in the cans used for delivering milk. When this is unavoidable, insist that the skimmed milk or whey can be kept clean.

48. Cans used for the return of skimmed milk or whey should be emptied and cleaned as soon as they arrive at the farm.

49. Clean all dairy utensils by first thoroughly rinsing them in warm water; then clean inside and out with a brush and hot water in which a cleansing material is dissolved; then rinse, and lastly sterilize by boiling water or steam. Use pure water only.

50. After cleansing, keep utensils inverted, in pure air, and sun if possible, until wanted for use.

LIST OF LOCAL HEALTH OFFICERS IN THE STATE OF VERMONT.

ADDISON COUNTY.

L. C. Seeger.....Addison
Dr. H. L. Townshend.....Bridport
F. H. Palmer.....Bristol
J. S. Wing.....Cornwall

Digitized by Google

E. V. Reynolds, M. D.....Ferrisburg
T. V. Hooker.....Goshen
Sardis F. Hubbard.....Granville
E. B. Claflin.....Hancock
J. G. Barker.....Leicester
G. A. Thayer.....Lincoln
Dr. D. C. Noble.....Middlebury
E. W. Meader.....Monkton, P. O. R. F. D. No. 2, Bristol
Dr. Frank Sanborn.....New Haven
Dr. Geo. G. Murray.....Orwell
Rollin J. Kent.....Panton
Dr. Jas. R. Hamblin.....Ripton
Dr. O. W. Bump.....Salisbury
Dr. C. W. Howard.....Shoreham
Dr. Henry Wade.....Starksboro
Dr. G. I. B. Willard.....Vergennes
H. W. Day.....Waltham
Geo. H. Wright.....Weybridge, P. O. Middlebury
David J. Brown.....Whiting

BENNINGTON COUNTY.

Dr. W. S. Phillips.....Arlington
H. L. Stillson.....Bennington
C. B. Kent.....Dorset
Wm. N. Matteson.....Glastonbury
M. D. Bates.....Landgrove
Geo. Smith.....Manchester
M. J. Hapgood.....Peru
D. T. Bates.....Pownal
Dr. C. A. Perry.....Readsboro
Dr. J. M. Moore.....Rupert, P. O. West Rupert
Wm. J. Hamilton.....Sandgate
Geo. J. Bond.....Searsburg
John Gordon.....Shaftsbury, P. O. South Shaftsbury
Dr. L. H. Nichols.....Stamford
Edmund A. Graves, Esq.....Sunderland
Geo. P. Burbee.....Winhall
John Rooney.....Woodford

CALEDONIA COUNTY.

Dr. H. A. Elliott.....Barnet
Dr. W. R. Noyes.....Burke, P. O. West Burke
Dr. Chas. E. Libby.....Danville
Dr. Geo. B. Hatch.....Groton
Dr. S. E. Darling.....Hardwick

Digitized by Google

P. H. Graves.....Kirby, P. O. Lyndonville
Dr. J. W. Copeland.....Lyndon Village and Lyndonville
H. D. Packer.....Newark
Dr. A. J. Mackay.....Peacham
Dr. G. W. Darling.....Ryegate
A. H. Noyes.....St. Johnsbury
Dr. S. A. Jones.....Sheffield
J. N. Sawtelle.....Stannard
Herman D. Chapman.....Sutton
N. J. Kingsbury.....Walden
E. W. Brown.....Waterford
D. B. Leslie.....Wheelock

CHITTENDEN COUNTY.

G. A. Pease.....Bolton, P. O. Jonesville
J. W. Courtney.....Burlington
H. H. Wheeler.....South Burlington
Dr. W. H. H. Varney.....Charlotte
Dr. E. A. Burdick.....Colchester, P. O. Winooski
Dr. C. M. Ferrin.....Essex, P. O. Essex Junction
Dr. H. E. Hunt.....Hinesburg
Dr. F. D. Falby.....Huntington
Dr. Geo. B. Hulburt.....Jericho
Dr. J. S. Coburn.....Milton
Dr. H. H. Seeley.....Richmond
Dr. W. H. Ranks.....Shelburne
Frank E. Hinsdale.....St. George
Charles P. Newton.....Underhill
H. S. Stone.....Westford
Dr. A. L. Bingham.....Williston

ESSEX COUNTY.

Edwin W. Spencer.....Bloomfield
Dr. H. E. Sargent.....Brighton, P. O. Island Pond
W. A. Taylor.....Brunswick, P. O. add. Coos, N. H.
Dr. Artemas Ward.....Canaan
Geo. B. French, M. D.....Concord
C. E. Ball.....East Haven
Allen M. Carpenter.....Granby
Frank G. Adams.....Guildhall
O. C. Sims.....Lemington, P. O. Colebrook, N. H.
Dr. Joseph Bretling.....Lunenburg
Geo. B. McC. Rich.....Maidstone, Express office, Strafford Hollow, N. H.
J. L. Smith.....Norton, P. O. Averill
Geo. A. Colby.....Victory

Digitized by Google

FRANKLIN COUNTY.

Dr. W. B. Hyde.....Bakersfield
Dr. E. L. Washburn.....Berkshire
Dr. F. S. Hutchinson.....Enosburg (Falls)
F. A. Petty, M. D.....Fairfax
Dr. J. R. Patten.....Fairfield
Arthur Hooper.....Fletcher
Dr. J. T. Hefflor.....Franklin
Dr. T. A. Brennan.....Georgia
Dr. E. A. Bates.....Highgate Center
Dr. E. T. Brown.....Montgomery Center
Dr. J. H. Hamilton.....Richford
Geo. H. Dunsmore.....St. Albans Bay, P. O. R. F. D. No. 1, Swanton
Dr. A. O. Morton.....St. Albans City
Dr. W. H. Powers.....Sheldon
Dr. Frank H. Dunbar.....Swanton

GRAND ISLE COUNTY.

Dr. F. H. Rogers.....Alburgh Springs
Dr. G. H. Branch.....Grand Isle
Dr. James King.....Isle La Motte
Henry Hazen.....North Hero
Dr. W. W. Styles.....South Hero

LAMOILLE COUNTY.

A. J. Chandler.....Belvidere
Dr. J. H. Bean.....Cambridge, P. O. Jeffersonville
Dr. W. H. Bacon.....Eden
F. L. Slayton.....Elmore
Dr. C. S. Leach.....Hyde Park
Dr. R. G. Prentis.....Johnson
W. T. Slayton, M. D.....Morrisville
Dr. J. C. Morgan.....Stowe
Dr. E. B. Maurice.....Waterville
C. F. Gale, M. D.....Wolcott

ORANGE COUNTY.

Dr. Fred Fletcher.....Bradford
Frank H. Cleveland.....Braintree
Dr. E. E. Ellis.....Brookfield
F. H. Godfrey, M. D.....Chelsea
Dr. C. H. Hazen.....Corinth
W. H. Daniell.....Fairlee
Dr. H. H. Lee.....Newbury, P. O. Wells River

Digitized by Google

R. E. Beard.....Orange
Dr. J. P. Gifford.....Randolph
Dr. I. L. Nowlan.....Strafford
Dr. Walter Gustin.....Thetford
Dr. C. N. Fox.....Topsham
Dr. H. H. Haywood.....Tunbridge
L. L. Robinson.....Vershire
————.....West Fairlee
E. M. Seaver.....Washington
Dr. Wm. J. Tindall.....Williamstown

ORLEANS COUNTY.

Dr. A. M. Goddard.....Albany
Dr. M. F. Prime.....Barton
J. C. Orne.....Brownington
N. C. Eastman.....Charleston
R. F. Willard, M. D.....Coventry
Dr. C. W. Duston.....Craftsbury
H. E. Somers, M. D.....Derby
Amos P. Bean.....Glover
Dr. F. C. Kenney.....Greensboro
Ernest G. Moulton.....Holland, P. O. Derby Line
George W. Parker.....Irasburg
A. A. Macomber.....Jay
Dr. D. J. Sheean.....Lowell
Frank L. Holmes.....Morgan
Dr. E. E. Whitaker.....Newport
Dr. A. M. Butterfield.....Troy
J. O. Robinson.....Westmore
Dr. W. A. Young.....Westfield

RUTLAND COUNTY.

Dr. J. P. Newton.....Benson
Dr. C. W. Peck.....Brandon
Edw. R. Clark, M. D.....Castleton
E. J. Perry.....Chittenden
L. C. Squires.....Clarendon
Dr. E. O. Whipple.....Danby
Dr. J. H. Carty.....Fair Haven
S. A. Smith.....Hubbardton
L. S. Peck.....Ira
H. H. Shed.....Mendon
Dr. T. S. Brown.....Mount Holly, P. O. Mechanicsville
Dr. W. H. Grinnell.....Mount Tabor
Dr. A. C. Norton.....Middletown Springs

Digitized by Google

Dr. H. L. Manchester.....Pawlet
C. W. Brigham, M. D.....Pittsfield
Dr. H. H. Swift.....Pittsford
Wm. Nathaniel.....Poultney
Dr. Thomas H. Hack.....Proctor
R. Halford Miner, M. D.....Rutland City
E. S. Slade.....Rutland Town
Jehiel Webb.....Sherburne
Dr. B. D. Colby.....Sudbury
T. G. Pearson.....Shrewsbury, P. O. Cuttingsville
Ed. G. Taylor.....Tinmouth
J. H. Buffum, M. D.....Wallingford
W. H. Lake.....Wells
Dr. W. H. Morehouse.....West Haven
Dr. C. B. Ross.....West Rutland

WASHINGTON COUNTY.

Dr. J. W. Jackson.....Barre City
Dr. E. H. Bailey.....Barre Town, P. O. Graniteville
James M. Huse.....Berlin
J. M. Fisher.....Cabot, P. O. Lower Cabot
Dr. E. A. Wilber.....East Calais, P. O. Adamant
E. W. Huntley.....Duxbury
J. B. Thompson.....Fayston
Dr. H. S. Carver.....Marshfield
O. B. Culver.....Middlesex, P. O. Montpelier R. F. D.
Dr. Frank Wheeler.....East Montpelier, P. O. add. North Montpelier
Dr. W. Lindsley.....Montpelier City
Dr. J. Haylett.....Moretown
S. H. Kent.....Northfield
Dr. E. P. Gale.....Plainfield
Geo. B. Hall.....Roxbury
Dr. H. T. J. Howe.....Waitsfield
G. A. R. Bragg.....Warren
Dr. E. A. Stanley.....Waterbury
Dr. G. G. Hall.....Woodbury
Dr. W. D. Turner.....Worcester

WINDHAM COUNTY.

E. S. Kingsley.....Athens
Dr. Henry Tucker.....Brattleboro
V. W. Ranney.....Brookline
C. E. Mann.....West Dover
A. E. Miller.....East Dummerston
Dr. Frank L. Gilbert.....Grafton

Digitized by Google

F. L. Wellman.....Guilford
John Galvin.....West Halifax
Dr. F. C. Brigham.....Jamaica
Geo. G. Smith.....South Londonderry
E. P. Adams.....Marlboro
Dr. P. P. White.....Newfane, P. O. Williamsville
M. A. Whitman.....Putney
Dr. E. S. Allbee.....Rockingham, P. O. Bellows Falls
Fred V. Johnson.....Somerset
P. O. Eddy.....Stratton
Dr. Thomas Rice.....Townshend
E. O. Lee.....Vernon
O. V. Hefflon, M. D.....Wardsboro
Geo. W. Metcalf.....Westminster
A. A. Butterfield.....Whitingham
J. H. Kidder, Esq.....Wilmington
L. B. Chapman.....Windham

WINDSOR COUNTY.

A. C. Bigelow.....Andover
Fred H. Olney.....Baltimore
Dr. H. V. Hubbard.....Barnard
Dr. L. M. Green.....Bethel
Dr. C. O. Boyden.....Bridgewater
Dr. Geo. D. Buxton.....Cavendish, P. O. Proctorsville
Dr. Wal. L. Havens.....Chester
Dr. E. A. Barrows.....Hartford
Dr. Geo. P. Morris.....Hartland
Dr. W. N. Bryant.....Ludlow
Dr. R. J. Goss.....Norwich
Douane C. Pierce, M. D.....Plymouth
Wm. O. Miller.....Pomfret
Bert. R. Wilkins.....Reading
Dr. C. M. Campbell.....Rochester
Dr. E. J. Fish.....Royalton, P. O. South Royalton
Dr. J. C. Kenney.....Sharon
Dr. C. W. Locke.....Springfield
Dr. C. C. Smith.....Stockbridge
S. W. Butterfield.....Weathersfield
Dr. C. A. Smith.....Weston
Ray L. Blanchard.....West Windsor
Dr. J. D. Brewster.....Windsor
Ernest A. Spear.....Woodstock

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

Volume VI. No. 4.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

Sanatoriums for Consumption. The appearance of a third edition of Dr. Walters' book on *Sanatoria for Consumptives*, shows that this work is appreciated. Dr. Walters has added to the list of institutions described the not inconsiderable number recently established. Great care has been taken to obtain full and reliable information about all the sanatoriums which are included, and what Dr. Walters in his preface describes as an unofficial directory of existing sanatoriums for consumptives not only fulfills that intention but has become a standard work of reference on the subject of the construction, arrangement, and administration of such institutions. The first part of the book discusses briefly the essential points in the soil, situation, building, and furnishing, as well as the treatment of the patient as regards diet and exercise. Less importance is now attached to the influence of altitude and special climates than formerly, for, as Dr. Walters says: "Neither high altitude, dry atmosphere, fine weather, equable temperature, nor abundant sunshine is essential to success, however useful they may be, or desirable in particular cases." The four essentials are pure, dust-free air; fresh and bracing atmosphere; sufficient fine weather, or sufficient artificial shelter, to render an outdoor life attractive; and a dry, warm, well-drained soil. "Wherever these four conditions are found, and suitable arrangements can be made, it should be possible to treat consumptives with success." As there are many places where these essential conditions may be found, the successful treatment of consumptives can be carried out here, and Dr. Walters very rightly emphasizes the importance of weighing the discomforts and disadvantages of traveling and of foreign residence, before advising the consumptive patient to go abroad to seek a cure which may be found in his own country. The dangers to invalids of hotel life and of the amusements of a fashionable health resort are also pointed out. The second, and much the larger portion of the book, is descriptive of the different institutions. The countries are arranged alphabetically, which is convenient; since, however, it has been insisted on that it is unnecessary to go abroad to find the essentials of treatment, it might have been more convenient in an English book to put the sanatoriums of the British Isles first. A table showing, for each county or district the number of sanatoriums, their names and

Digitized by Google

position, number of beds, elevation, and other details, forms a useful introduction to each chapter, and facilitates reference.

Bacteriology of "Colds." Benham has investigated the bacteriology of mild cases of common cold, the usual symptoms being sore throat, sneezing, malaise, headache, and general muscular pains. Swabs were taken from the nose and throat, from which cultures were made on serum agar, and subcultures on nasgar. Diphtheriod organisms were found in twenty out of twenty-one cases; cocci negative to Gram's stain (*Micrococcus catarrhalis*), ten cases; Pfeiffer's bacillus (influenza), two cases. So that the main feature of the series is the almost constant occurrence of a diphtheriod bacillus. The author sums up his conclusions as follows: This diphtheroid organism conformed to the description of Cautley's bacillus, found by him in cases of common cold. It gave reactions in carbo-hydrate media which serve to differentiate it from diphtheria on the one hand and xerosis and Hofmann on the other. The question of the exact symptoms, if any, caused by the diphtheriod bacillus and the *Micrococcus catarrhalis,* respectively, cannot be said to be settled. The author suggests the name *Bacillus septus* for this diphtheroid bacillus.

Alcoholism and Heredity. Rybakoff concludes as follows from a study of alcoholism as related to heredity: In ninety-four per cent of all alcoholics one finds hereditary predisposition to drink or a hereditary inclination to nervous or mental disease. Over ninety-two per cent of all drunkards have relatives in their immediate families who are given to drink. The neuro-psychical predisposition is met with in drunkards much less than the alcoholic heredity. Alcoholism tends to be transmitted in a direct line, usually from the parents. Of the drunkards examined by the author, sixty-six per cent had alcoholics among their parents, thirty-six per cent among their grandparents, and forty-six per cent among uncles and aunts. Women more frequently than men become alcoholics without any hereditary predisposition. Alcoholic heredity is more readily transmitted from the father's line than from the mother's. The reverse holds good as regards neuro-psychical heredity. The heredity factor is strongest in periodical drunkards, next in habitual drunkards, and least in occasional drunkards. Periodical drunkenness is transmitted as a rule as such to posterity. Drunkenness in one parent usually leads to mild forms of drunkenness in the children, while drunkenness in both parents as a rule descends in severe form upon the next generation. The author concludes that medicines containing alcohol should not be prescribed oftener than is absolutely needful, and that in patients with a hereditary predisposition such medicines should be entirely avoided.

Professor Koch to Remain in Africa. Prof. Robert Koch has resigned the presidency of the Berlin Medical Society, to which he was recently elected, because he has found that the researches on tropical diseases on which he is at present engaged in Africa have proved so engrossing that he will not be able to return to Germany for two years or more.

Digitized by Google

*PROGRAM OF EIGHTH ANNUAL

School of Instruction for Health Officers

BURLINGTON, VT.

July 9 to 12, Inclusive, 1906

Arranged and issued by the State Board of Health.
Meetings to be held in the Armory.

MONDAY EVENING, JULY 9, 8 O'CLOCK.

Introductory remarks by the President of the State Board of Health, Charles S. Caverly, M. D.

Address: Governor Charles J. Bell.

Address: Hon. Frederick Fleetwood, Secretary of State.

Address: Dr. T. R. Stiles, Member of the Board.

TUESDAY MORNING, JULY 10, 9.30 O'CLOCK.

Paper: "Hygiene of the Schoolhouse," by Hon. Mason S. Stone, Superintendent of Education.

Discussion: Henry Tucker, M. D., Brattleboro; C. W. Noyes, M. D., Burke.

Paper: "Contagious Diseases in the School," by J. W. Copeland, M. D., Lyndonville.

Discussion: H. A. Elliott, M. D., Barnet; Joseph Breitling, M. D., Lunenburg.

TUESDAY AFTERNOON, JULY 10, 2 O'CLOCK.

Paper: "Sewage Disposal," by Geo. C. Whipple, C. E., Consulting Professor to the Brooklyn Polytechnic Institute.

Discussion: Edward R. Clark, M. D., Castleton; C. H. Hazen, M. D., Corinth.

---

*This program is subject to change before being finally printed in pamphlet form.

Digitized by Google

Paper: "Public Opinion and Preventative Medicine," by H. L. Stillson. Bennington.

Discussion: W. T. Slayton, M. D., Morrisville; C. W. Peck, M. D., Brandon.

TUESDAY EVENING, JULY 10, 8 O'CLOCK.

Paper: "Venereal Diseases a Peril to the State," by Ferd. C. Valentine, M. D., New York.

Discussion: Dr. W. W. Townsend, Rutland; Lyman Allen, M. D., Burlington.

WEDNESDAY MORNING, JULY 11, 9.30 O'CLOCK.

Paper: "Advisability of Notification in Tonsilitis, Pneumonia, and Cerebro-Spinal Meningitis," by R. H. Miner, M. D., Rutland.

Discussion: Wm. Lindsley, M. D., Montpelier; D. C. Noble, M. D., Middlebury.

Paper: "Sanitary Laws," by Hon. Alexander Dunnett, St. Johnsbury.

Question Box.

WEDNESDAY AFTERNOON, JULY 11, 2 O'CLOCK.

The Vermont Society for the Prevention of Tuberculosis will hold a Symposium on Tuberculosis.

The Directors of the Vermont Sanatorium, Carroll S. Page, Olin Merrill, William N. Bryant, George Aitken, D. D. Burditt, F. G. Butterfield, Daniel C. Noble, Emily Dutton Proctor, Redfield Proctor, Jr., Frank C. Partridge, Charles S. Caverly, Frank H. Brooks, P. J. Barrett, and H. C. Tinkham, will be present at both afternoon and evening sessions and will participate in the discussion of different phases of the subject.

The members of the Vermont State Tuberculosis Commission will also be present.

Paper: "Prevention of Tuberculosis," by W. N. Bryant, M. D., Ludlow, Secretary of the Board of Directors, Vermont Sanatorium.

Paper: "Compulsory Notification in Tuberculosis by all Physicians," by Thomas Darlington, M. D., Health Commissioner, New York City.

WEDNESDAY EVENING, JULY 11, 8, O'CLOCK.

Paper: "Relative Merits of Sanatorium and Home Treatment of Tuberculosis," by Herbert N. King, M. D., Physician in Chief at the Loomis Sanatorium.

Discussion by gentlemen of Board of Directors and others, followed by election of officers of the Vermont Society, and other business.

Digitized by Google

THURSDAY MORNING, JULY 12, 9.30 O'CLOCK.

Paper: "Pure Foods," by H. W. Wiley, M. D., Chief of Bureau of Chemistry, United States Department of Agriculture.

Discussion: Joe W. Jackson, M. D., Barre; J. P. Gifford, M. D., Randolph.

Paper: "The Medico-Legal Work of the State Laboratory in Its Relation to the State," by Prof. H. L. White, Medico-Legal Chemist to State Board of Health.

Discussion: Hon. S. Hollister Jackson, Barre; Hon. Warren R. Austin, St. Albans.

ACT NO. 90, OF LAWS OF 1900, AUTHORIZES THE ESTABLISHMENT OF A SCHOOL OF INSTRUCTION FOR HEALTH OFFICERS OF THE STATE.

In accordance with the provision of this law the Eighth Annual School for the Health Officers of the State will be held in Armory Hall, Burlington, opening Monday evening, July 9, at 8 o'clock. All health officers of the state are hereby notified and called to be present on that date to attend the sessions of said School. Only in case of his sickness will any health officer be excused for non-attendance; such excuse must be filed with the secretary.

Per order of the State Board of Health.

HENRY D. HOLTON, *Secretary.*

Arrangements will be made with the railroads of the state to give convention rates to all those attending the School.

A register of the School will be open at the Armory, where hand baggage and overcoats may be checked at any time. Those who wish board in private families will find there a list of boarding houses.

Every member of a local health board should register immediately on arrival.

The Laboratory of Hygiene, 196 Main Street, will as usual be open at all times to visiting health officials, and all are expected to make free use of the Laboratory rooms.

The School sessions are open to the people of Vermont, and all are invited to participate in the discussions as far as the time will permit. Health officers are expected to utilize the opportunity to get information on any points of practical importance in their work, and all will study brevity in their remarks and questions.

Digitized by Google

614.0979
V2b

MAY 12 1908

Bulletin No. 1, Volume VII.

Issued Quarterly by

Vermont State Board of Health,

September 1, 1906.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS:

Introductory Remarks at the Opening of the Eighth Annual School for Health Officers, by Charles S. Caverly, M. D.

Address by Governor Charles J. Bell.

Address by Hon. Frederick G. Fleetwood, Morrisville, Vt.

Address by Dr. H. D. Holton, Secretary of the State Board of Health.

Sewage Disposal, by George C. Whipple.

Public Opinion and Preventive Medicine; or Cause and Effect in Sanitary Administration, by H. L. Stillson, Health Officer of Bennington.

Advisability of Notification in Tonsilitis, Pneumonia, and Cerebro-Spinal Meningitis, by S. H. Miner, M. D., Rutland, Vt.

News Items.

BRATTLEBORO, VT.

1906

Digitized by Google

Digitized by Google

INTRODUCTORY REMARKS AT THE OPENING OF THE EIGHTH ANNUAL SCHOOL OF INSTRUCTION FOR HEALTH OFFICERS, MONDAY EVENING, JULY 9, 1906.

By Charles S. Caverly, M. D., President of the State Board of Health.

Health Officers of Vermont, Ladies and Gentlemen:—

It is a genuine pleasure to greet you for the eighth time at the Annual Health Officers' School. This School is yearly becoming more a feature of sanitation here in Vermont. I know, from inquiries that come to the State Board, that many health officers look forward to these sessions for various reasons: some expect to get perplexing practical questions answered, others expect to get the latest views on some growing subject, and all are sure of getting encouragement to face the prosaic duties of practical hygienic work.

Modern sanitation, public hygiene, preventive medicine (by whatever name we know it) means more every year. The *methods* and *instruments* which are being devised to protect life and conserve physical health multiply rapidly. Science is working over hours. He must be a many-sided man who would put into practical operation every device which bears the endorsement of science to promote human health. He must always be on the alert for late discoveries and developments.

Sanitary science, in its practical workings, touches and includes many other sciences. The practical sanitarian must be something more than a doctor, he must be somewhat of a chemist, an engineer, an architect, yes, a lawyer, and above all, a tactful and resourceful man. He must know the laws of science, the laws of the state, and human nature. So, when we ask a mechanic, a merchant, a farmer, a lawyer, or a doctor to serve as health officer, we invite him to undertake something that should involve studious preparation. There is no single activity or vocation which in itself fits a man in these days to safeguard the physical health of a town or a city, according to the rules of modern knowledge.

The registration of vital statistics, the selection and protection of safe water and ice supplies, the disposal of sewage, the heating, lighting, ventilation and plumbing of buildings, both public and private, school sanitation, the guarding of food supplies, and the management of infectious diseases is each a science in itself. Yet our laws expect all this knowledge of local health officers. We have no university that furnishes this post-graduate instruction to the medical man. The state of Vermont has furnished to its health officials the best substitute for this university instruction which has yet been devised: it has provided real practical instruction for its health guardians.

Digitized by Google

Here, at this School of Instruction, our state has for eight consecutive years been educating a corps of health officials. The instructors have, every year, been men of the highest standing in their specialties. The universities and health departments of the large cities of many states furnished us these teachers. First and last, we have had here the best talent the country affords. Those who have attended all these Schools have had the advantages of a liberal education in all departments of practical hygiene, such as no other state, I believe, has given its health officials.

I am led to recount these facts for two reasons: First, that you who are the recipients of these advantages may not be unappreciative; and second, that the public generally may see the advantage of utilizing the services of officials who have attended these Schools. Every health officer who has attended these Schools uninterruptedly has enjoyed better facilities for fitting himself for his office than any one else in his community can possibly have had. He should not be displaced without very good reasons. The converse of this proposition is equally true; viz., that those health officers who do not show a disposition to utilize the advantages of this School should give place to those who will. These facts are commended to the attention of the selectmen and aldermen of all our towns and cities.

In arranging our program for this School, we have aimed to maintain the standard of its predecessors. The subjects treated are all such as we may profitably consider.

School Hygiene should be a live subject in rural Vermont. The Superintendent of Education will speak of the schoolhouse, and the school as a distributor of disease will be treated by one of our oldest health officers. Every health officer should be interested in these papers, for the schoolhouses are, by law, in their care. The role of the school in the spread of epidemic diseases is of the greatest importance.

Methods of Sewage Disposal is a subject about which we, in Vermont, have everything to learn. The discharge of untreated sewage into the nearest available body of water is an abomination that is working hardship in all directions, and cannot be tolerated always. The State Board has given this subject careful attention. Act No. 115 of Laws of 1902 specifies that:—

"No sewage, drainage, refuse or polluting matter of such kind and amount as either by itself or in connection with other matter will corrupt or impair the quality of the water of any pond or stream used as a source of ice or water supply by a city, town, village, public institution or water company for domestic use or render it injurious to health, shall be discharged into stream, pond or upon their banks."

The general enforcement of this section would undoubtedly solve the question of public water supplies for many of our towns, but, on the other hand, it could work hardship and entail great expense on most of the villages and cities of the state already equipped with sewerage systems. The State Board has determined to allow no sewerage systems, hereafter built, to empty into any body of water used for domestic purposes, but it has not

Digitized by Google

seen its way clear to take action against all the municipalities and companies which already have such systems.

It is a theoretical truth that every body of surface water in our state should be a safe water supply. It remains a practical truth that none, of any size, are. This subject of the modern methods of sewage disposal deserves our closest attention. It is to be treated at this School by one of best authorities on the subject.

Preventive medicine and public opinion is a theme that will appeal to all of us. The successful enforcement of preventive measures is largely dependent on such public opinion. This is to be treated by a health officer of wide and successful experience, as we all know.

The subject of the *Public Peril from Venereal Diseases* is one that is second only to the tuberculosis problem. It is now receiving wide attention all over the world. The secretary of the State Board has given this matter much attention, and he has distributed to all physicians of the state blanks for reporting on the prevalence of these diseases. It is generally agreed, I think, that this class of diseases is more widespread than the unthinking public is aware of, and that they lead up to many organic diseases whose causes were formerly unrecognized. This subject, too, will be treated by an expert.

The list of notifiable diseases is yearly becoming longer. Some recent additions are tonsilitis, pneumonia and cerebro-spinal meningitis. It is a sanitary axiom that the first step in the prevention of any disease is to secure its notification to the health authorities.

Tonsilitis is a common and often harmless malady; it is infectious, however, and preventable. Furthermore, its coincidence with that other and severer disease, diphtheria, and the difficulties sometimes encountered in differentiating between them give it interest to the sanitarian.

Pneumonia is perhaps our most fatal disease. Its bacteriology is known. No apology is necessary, therefore, for placing it here for consideration.

Cerebro-spinal meningitis has been under close scrutiny the past two years. Its disastrous effects have at times created widespread alarm. Vermont has for one hundred years been a favorite field for its ravages. It is a disease to the restriction of which we should give careful thought.

The *Public Health Laws* is a subject of perennial interest to the health officer. Every health officer must know these laws. They multiply fast. It is often a question if they are regarded seriously by the public.

I regret to say that there are excellent reasons for thinking that the medical profession does not seem to interpret our public health laws literally. There seems to be a reluctance on the part of health officials to taking active measures to secure proper respect for these health enactments, by prosecuting plain violations. During the past two years, there were six prosecutions in the state reported by health officers, under these laws. If every infraction of these laws had been prosecuted, there would have been many more; how many can only be guessed.

Take, for instance, the matter of the notification of infectious diseases:

Digitized by Google

the law prescribes, as you all know, that a physician who *knows* or *suspects* that a case to which he has been called is sick or has died of a communicable disease, etc., shall immediately notify the health officer. The figures reported by different health officers in their last biennial reports lead to the belief that this law is pretty generally observed, perhaps better than formerly. They show that there were during the years 1904 and 1905, 7,376 cases of measles, for instance, 1,112 cases of mumps, 1,224 cases of German measles, and 667 cases of chicken-pox. There were probably more cases of each, but that our health officers were able to secure reports from so many of these sometimes styled "children's diseases" shows a pretty general regard for this law.

As I said, there are reasons for thinking this regard is not universal. The health officer of this city of Burlington reports for the years 1904 and 1905, 189 cases of diphtheria and croup on record at his office. An examination of the record of the Laboratory of Hygiene for these two years shows that positive reports were made of cultures to attending physicians in Burlington in *318 different cases* of this disease. This seems to indicate that there were 129 cases of diphtheria in Burlington during these two years not reported to the health officer, and presumably not quarantined. If these are the facts, it would explain the persistence of diphtheria here for so long a time.

Again during the same biennial term, in this same city there were reported to the health officer sixty-eight cases of typhoid fever. The Laboratory records show that positive results with the Widal test were reported to physicians in *132 cases* during this period. In other words only about half the number of cases of typhoid fever are reported to the health officer.

I would not have you think that Burlington doctors are the only sinners against these health laws. These figures might, perhaps, be duplicated in many other towns and cities and in other diseases if a laboratory of hygiene could furnish as accurate diagnoses in other diseases and was as conveniently located in other towns as it is here in Burlington. At any rate, there is no escape from the inference that we have not yet reached exact figures as to the prevalence of disease.

These facts are entitled to thought by you health officers, and such action should be taken by you as will set the medical profession thinking. I appreciate the reluctance you all feel to starting legal prosecutions. Yet the health official who seeks the full and impartial enforcement of the laws must occasionally resort to such measures. The diligent health officer is bound to be the man with the muck rake in his community, and his community is surer to be healthier and more prosperous in direct proportion to his diligence in wielding this humble implement.

We have enough public health laws; possibly more than we can enforce. We must put forth our best efforts to secure their exact enforcement, however, for they are no more numerous or intricate than sanitary knowledge warrants, and we know their enforcement makes for social happiness and commercial prosperity.

Our program contains, as usual, a paper from a legal gentleman, and I

Digitized by Google

take this occasion to announce that those of you who have questions relating to any phase of our public health laws will be expected to put these in writing and hand them to the secretary by Tuesday evening at the latest.

Tuberculosis occupies a large place in our program. Various phases of the tuberculosis problem will be treated by men whose names you will all recognize as authorities. Our interest in this great problem has taken a practical turn, since the announcement of Senator Proctor's munificent foundation. The Vermont society for the study and prevention of this disease should receive the support of every one interested in the subject. It should have a live membership, and be prepared, if called upon, to continue the work so well started by the State Tuberculosis Commission.

Pure foods is a timely theme in a meeting of sanitarians in the year 1906. It is a theme of popular interest. The last Legislature of Vermont enacted a law on this subject. The State Board has done such work under this law as its appropriation warranted. Enough has been done to demonstrate the usefulness of such a law. A single incidence of the tendency to carelessness, if not actual fraud, in the production of a common food product is the results obtained in the recent analyses of milk. These samples were taken from milk supplies in all sections of the state. Of 138 samples examined, only fifty-one were up to the standard. The prevailing trouble with the milk furnished our people is not defect in quality so much as "inflammatory products" and "extraneous matter." In plain terms, the milk we drink frequently contains pus and dirt.

There is naturally some criticism of the work of the State Board in bringing to public notice the true facts about some of our commonest food products, as tending to injure their sale. If Vermont dairy products and maple sugar are impure, whether from carelessness or fraud, it is better that the facts be discovered and published at home than by outsiders.

The public which buys and consumes foods of all kinds is entitled to know what it is buying and consuming. Recent developments in Chicago, together with the passage of a national food law, indicate that the public is bound to know the truth about these things. The courageous and strenuous occupant of the executive mansion at Washington has set the pace for health boards throughout the country. Every fair-minded person must applaud President Roosevelt's determination that American food products, whether for domestic or foreign use, must be prepared and marketed in accordance with the laws of cleanliness and common honesty. No one has been more intimately associated with the pure food crusade than Dr. Wiley. We are fortunate in having his name on the program for this School.

Finally, the medico-legal work of the State Laboratory will be discussed by the chemist in charge and by several prosecuting officers of the state.

I have given this imperfect forecast of what is in store for you at this School, hoping that you may be better prepared to get something of real practical good from these sessions as the real practical part of the program develops. Every day and every session will have its feature. It is to be

Digitized by Google

hoped that every health officer of the state, unless himself ill, will be present; that all will stay through the last session.

It is hardly necessary to remind you that the time is precious, and that all discussions should be with a view to developing points of real practical value in the routine work of the health officer. This is a Health Officers' School to which every one interested in sanitation is welcome.

ADDRESS BY GOVERNOR CHARLES J. BELL.

Mr. President, Ladies and Gentlemen:—

I am a Christian scientist enough to appreciate the fact that when I am in the presence of so many of the members of the State Board of Health and health officers of the state I should certainly feel my best. I am very glad to be with you here this evening, but the little I know that will be of interest or instruction to you, I have learned from our valued secretary of the State Board of Health, for he has traveled with me many times when I was a member of the cattle commission; so I hope to be permitted to reiterate some of the statements I have heard him to make heretofore.

In the town where I live, Walden, we cannot support a doctor, so we look about for the best man to fill the position of health officer, and he is the town clerk; and with what patent medicine comes into the town, we get along very nicely.

In years gone by, in fact, I can well remember when the State Board of Health was not thought to be of as much value as it is at present. In those old days our mothers knew how to brew and bake, and they taught their daughters many of the things which we of to-day consider the plain things of life. I can remember when the dainties which were on my mother's table would not make anybody sick, and one might eat freely and still be alive and happy; but in these days things are quite different. It may be on account of the impure foods. I can see some gentlemen before me who are wearing the Grand Army button. They will remember with me some of the things we used to eat at nine or ten o'clock at night. We were never troubled with dyspepsia. We would make out a good supper of what we called fritters, which were made of salt, flour and water, and fried in a pan. They would be rather a heavy load on one's stomach to-day, but we pulled through, and were none the worse for it.

The secretary of the State Board of Health has done much earnest work in years past in speaking at the Board of Agriculture meetings. We all like to have our own way and we like to feel that the water in our well is all right. We believe it must be pure and good, for our fathers and grandfathers before us have drunk from this same well. Vermont has many things to be proud of. I think that the health officer and the State Board of

Digitized by Google

Health are educating themselves and making the majority of people within this state to understand that there is more in the open air and in sunshine and modest living than in anything else. We can abuse ourselves, and if we do so continually, some part of our body is going to suffer. My advice is, take a bowl of good bread and milk and there will be plenty of nourishment in it and you certainly will have no ill effects. And I would not feel as though I would be obliged to send it down to the Laboratory to be examined either.

I understand that there are some people who are never satisfied with their food. They want something to-day a little different from what they ate yesterday. This is simply a habit. I can well remember when I was n't allowed a cup of coffee every morning. I had a cup of coffee on Sunday morning and that was the only cup I had during the entire week. Later, when I went into the army, I had all I could drink. The people of to-day are eating altogether too many dainties. Take a colt; you can spoil him if you want to by overfeeding him, or you can fix him so that he will be worth money. It is probably quite true that we have indulged a little too much in the dainties of life, and have neglected to take food which builds up the system and gives us the strength to do our daily work. Did you ever think that when a person is taken sick and a physician is called in, the doctor, in prescribing some delicacy, almost invariably prescribes a boiled egg or omelet for the patient? Did you ever think of the gizzard in the hen which filters the material which makes the nice little egg which is recommended by every physician? I think we know too much about what we are eating. Leave it to the State Board of Health and they will direct us, and we should follow on pretty carefully. We as Americans and Vermonters want our own way until the doctor gets after us, and then we have to obey him and pay the bill, too.

I was down to the graduating exercises of the University of Vermont last week, and while there were Bachelors of Art, and Bachelors of Science, and Bachelors of Agriculture, there were only a few graduating from each department, but when the Doctors of Medicine came forward to receive the reward for their work, every seat was filled and I thought possibly some of the older physicians in the state would have to move out to make room for them.

Vermont is a grand little state. It has more of sunshine in a few days than has any other part of the whole country, and we can get more good out of life in five months in Vermont than we can in ten in any other part. There is pure water in the spring, pure air, contentment for the heart and soul, and this will do more for us than the doctor can sometimes. With the aid of the State Board of Health, which is doing a great deal for these beautiful homes of ours, and with the health officer in every town, and a little faith in all these things, we can enjoy health here in Vermont better than in any other part of the world. Only last week we had some rain, some damp weather, but we also had so many pleasant days we forgot the rainy ones.

Digitized by Google

Burlington is a beautiful city, situated here on the shores of the lake, amid the hills, and what city or town could be a better place for such a meeting? I hope every health officer attending this School will learn what he can, and what you learn affects more than one person, for it affects the life of every person in your town. We are a privileged lot of people. We have the State Board of Health, the Tuberculosis Commission, the Cattle Commission, and we have liver pills and corn cures, so there certainly is no reason why we should not be happy here in Vermont.

There is no question but that the State Board of Health has done much for the people of the state of Vermont. Sometimes we must suffer from quarantine, which is for the health and happiness of not only ourselves, but our neighbor. When I had whooping cough, I was allowed to roam about and there was no quarantine imposed, but I don't know how many caught the whooping cough from me. But to-day how often we see the sign placarded upon the house, and how cautious people are regarding entering that house, and how few children, comparatively, are exposed. I can remember when it was hardly safe for a man to place a sign upon a house that a person within the house was suffering from measles. He was the enemy of that house for years to come. The first rule regarding health is, Obey your State Board of Health and obey the health officer of your town.

I did not appear here expecting to give you any instruction. The Hon. Secretary of State is here to-night with me. It is his privilege to talk to you and my privilege to listen to him. I wish to express my pleasure at being with the State Board of Health to-night and with the health officers of this state.

ADDRESS BY HON. FREDERICK G. FLEETWOOD, MORRISVILLE.

I am glad to-night to forsake the banks of the Lamoille and come to this city of Burlington, bordered by its beautiful lake, to attend the opening session of the Health Officers' School of Instruction and to meet this Hippocratic concourse. I can quite understand the zest and fervor with which the Romans went to the Temple of Æsculapius at Epidaurus, where they hoped to acquire health and vigor. If, perchance, they were successful in their quest and acquired their old-time strength, they crowned the statue of the god with enduring laurel and placed a votive tablet by the side of the statue, whereon they inscribed their thanks for their cure. So to-night I would place a tablet of honor on the brow of every physician in this state, for you doctors are the beacon lights of many a home. The laity seem to regard us lawyers and you doctors in much the same light. Our services are demanded in somewhat the same conditions; the doctor is only called in when disease confronts the household, and the lawyer is retained when disaster asserts itself. We may attain the same end, but differ in the

Digitized by Google

means. The surgeon pulls the legs of his patients by amputation, while the lawyer performs the same process upon his client by computation. Both lawyer and doctor require patients, but while your province is to cure yours we often lose ours. It is our pleasant duty, when called upon in the trial of a cause, to dress down our adversary, while you must dress up the wounds of your patient.

It is a curious thing how the best laws meet with opposition when an attempt is first made to enforce them. It is only a few years ago that the so-called "Health Acts" were passed by the Legislature, and they met instant suspicion. In the thought of the people there lurked the belief that behind the health officer stood a FEE and that this was the reason of the act. This belief, doubtless, was a heritage from the forefathers, for they came from neighboring states to the thinly populated land of the Green Mountains to found a home and to hew down and to clear the forests for their habitation. Now the very first instinct of the home founder is to procure something for himself; the pioneer must be supremely selfish; he must carve out his own fortune by carving out Nature herself. And this impulse of the early settlers has lastingly colored the life of our state, for new laws or enactments, which seem to take away any personal rights of the citizen, are instinctively viewed with alarm and meet with instant objection. It is only by the slow growth of adjustment, in the balancing of individual good with the larger good of the greatest number, that we learn that the state is an instrument for betterment of the mass. A man must first be taught how best to take care of himself and then, if he fails to observe this teaching, the state must step in and compel obedience. This is the province of law, and the usefulness of the state is measured by the care and protection meted out to the citizen. Sanitation is the superlative degree of sanity. You cannot have things that are good, unless you have things that are clean. In the broad sense, fighting, heretofore, has been a supreme test of a man's usefulness, but now education has slowly taught us that the paths of self and state preservation lie far more in concord than in discord. The current of modern life is curative, not combative. This trend of thought reveals itself in various paths of social progress. In the treatment of the criminal, we are learning that the aim of punishment is reformation of the wrongdoer, not merely the punishment of the individual. The whole trend of penology is toward the betterment of condition. With this end in view, juvenile courts are being established in our large cities in order to place the young offender, who lacks the benefit and blessing of a sound home training, in such clean surroundings and under such constant care and sympathetic teaching that he will shun the ways which lead to disease, dishonor and disaster and will rather seek the paths of wholesome living. Again, no greater indication of the world thought of the present can be found than in the growth of the principle of arbitration as the best method of adjusting international disputes. Now, the nations of the earth are yielding willing obedience to the doctrines of lasting peace and forsaking their adherence to the bloody demands of destructive warfare.

Digitized by Google

Such is the supremacy of this desire that a palace of peace at The Hague marks the meeting place of the nations. So in the profession of the law, especially in the practice in Vermont, the number of trials, particularly before the inferior courts, is not to be compared with the number a few years ago. The tendency is toward settlement of disputes, and justice trials no longer form the center of attraction for a community. In the case of the practice of medicine, the emphasis is more and more being placed upon the removal of the cause of the trouble, for if the cause is removed the trouble itself ceases. The stress is now placed upon the prevention of disease, rather than on its cure. Wherever a great national work is undertaken, the study of the authorities is first directed toward the best method to make the conditions under which the work is undertaken as favorable as possible. In the great task at Panama, the initial attempts have been made to ward off yellow fever and other diseases common to a tropical life by making the sanitary conditions wholesome, for the worth of the work of the laborer depends upon the soundness of his health. So in Havana the cleaning up of the streets of the city decreased largely the prevalence of disease, and the purity of its water supply gave the people at large better health and strength, and through improvements of living Havana is now blooming as the rose.

I cannot close without expressing my respect and regard for the Vermont doctor. His lot is a hard one, but he bears it so gracefully and cheerfully that he places before all of us an example of patience and fortitude. In the summer's heat and the winter's snow he is always on the move, bringing courage and strength to many a home. The doctor is the true democrat. His hands are always open to help suffering, and need is the call which brings into play his beneficent service. All success to the Vermont doctor.

The president announced that he had received a telegram stating that Dr. Stiles, who was to speak, was suddenly taken ill, and that in his absence he would call upon the secretary to address the School.

ADDRESS BY DR. H. D. HOLTON, SECRETARY OF THE STATE BOARD OF HEALTH.

I presume you are all familiar with the law creating the State Board of Health. One section is that the Board shall elect a secretary, who shall perform such duties as the Board may direct. That is why I stand up here to-night.

I am glad to meet you; to look into your faces, and to take you by the hand. In the interval between the last meeting and this, I had the pleasure of meeting only a few of you personally, but I have had pleasant corre-

Digitized by Google

spondence with almost all of you. I am always glad to hear from you, and glad to know of the good work you are doing.

As I look upon you men, I am sorry that the law does not read citizen of the state, instead of a legal voter, but I suspect that the originator of the law was looking forward to the time when every woman would be a voter and thus be eligible.

You are philanthropists. No one who has not a philanthropic spirit should enter into sanitary work. The amount of money, the amount of gratitude is so small that we may say he has no earthly compensation. His reward is heaven, and there you will receive the thankfulness which is your due.

What has been the result of all this work? The secretary of state has said that it is only a few years since these laws were enacted in Vermont. Fourteen years were spent with the different Legislatures in order to get a State Board of Health established. When almost all of us, except some of the older men, were in school, we were taught that the average length of human life was thirty-three years. Here in Vermont the average length of life within the last few years shows an increase of from fifteen to sixteen years. That is, the people live now to be on an average of between forty-five and forty-eight years of age. Does not that speak volumes?

You are not only to report on a nuisance or report a disease, but you stand as a guardian of the public health; you stand up, as the Angel of Mercy, to ward off those diseases that may come. This is your duty, and I am glad to say that letters which I have received show that you appreciate this. I often receive letters making inquiry regarding some condition that exists in a community that is detrimental to the public health of the people. They want to know what the law is, that they may rid the community of that menace. As the president of the board has said, the men who have attended these Schools have become more and more profitable. You know some doctors say: "You are destroying our business. We have not had the usual sicknesses we used to have. There is a feeling that measles and whooping cough do not amount to much. They are children's diseases. They have got to have them some time. Let them have them and let it be over with." If a man takes that view of the situation, whether a doctor or a health officer, he is about twenty-five years behind the times. It would be a sin to-day for any surgeon to attempt to perform an operation on any part of the body as I saw them perform operations when I was a student, or even when I first began practicing. I tried to be clean. I washed my hands. But I often wondered why suppuration took place more in this case than that, never suspecting that one's hands might have carried those germs. We did use the simple means of cleanliness. To-day we might expect to be punished for such work, and the punishment would be light if we were hung in effigy. It is just so with a health officer who allows a communicable disease to extend in his community. In 1905 the number of deaths from whooping cough and measles was larger than from diphtheria and scarlatina.

Digitized by Google

When a case of diphtheria appears everybody wants something done. The results from measles are more serious than from many other diseases. I often receive a death certificate with: Cause of death, tuberculosis; remote cause of death, measles. We all know how often it is said that such a person has tuberculosis; that, in fact, they have never been just right since they had the measles. I live near an insane asylum and I have been called to see a great many cases, and I have found that a good many cases of insanity have been traced back to whooping cough, mumps, or measles. They had those diseases; they became insane, and had to be taken to an asylum.

There is a good deal said in the newspapers regarding the remarkable results of the Japanese war, and some have attributed the lack of disease in those armies to the great knowledge the Japanese had with regard to sanitation. They had been in the West and they had learned those things. They went home and practiced them. They had one element which we have not. It is the foundation of their success in this particular,—that is obedience to law. When the surgeon of the army laid down the rule that they were not to drink from this or that spring, or drink where a certain plank was placed along the line of march; when he made the rule that all their underclothing was to be removed from the body at least once in every seven days; when he made the recommendation that only such and such foods were to be eaten, the entire corps of men obeyed as one man. When the health officer says that this water is polluted and must not be used as a drinking water; that a certain schoolhouse is not in a condition to admit the children, and is condemned, up rises some man and says: "My grandfather used that well and he lived to be seventy-five years of age; my father went to that school, and I went to that school, and I guess it is good enough for the children of to-day." That class of people do not consider that generation after generation have been polluting these springs and wells all these years. When he talks about his grandfather dying at seventy-five years of age, let us look up our statistics for 1904-05, and we will find that eighteen people in this state lived to be over one hundred years old, the oldest one hundred and fifteen, another one hundred and eleven, another one hundred and seven, and several one hundred and two, and one hundred and three, and one hundred and four. I venture to say that the oldest person here to-day may perhaps once in his lifetime have heard of some one who lived to be almost one hundred, not quite a hundred, but almost. I remember of seeing in Montreal a great many years ago a woman who was almost one hundred and one years of age, and people had come from all around the country to see this good sister who had lived to this great age. When you speak to people about their schoolhouses, they will say that they went to school there, and their children are going there and they are all pretty healthy, and that the school building will hold out a few years longer. When we come to the point of obedience to higher authority, we will not find it here as the officer of the Japanese army found it. When I visited the Indian school in Carlisle, Pa., I asked Captain

Digitized by Google

Pratt, "What is the first thing you teach these boys?" The reply was, "Obedience to constitutional authority." Ask your people at home, when they rise up against you, how many years it is going to be before they will learn the first principles of civilization which were enunciated in that Indian school.

I thank you for coming here; I thank you for your presence. It does the State Board of Health good to have you come up here and give us the result of your experiences. It helps and encourages us in the work we are doing. I am proud to say that Vermont is not lagging behind in sanitary work. Some few years ago a member of the Legislature said to me: "Your report of the vital statistics is pretty expensive and is n't worth very much, is it? I am going to recommend that the cost of that report be reduced to $300." I said, "If I were in your place, I would cut the whole thing right out, for no man can compile any valuable statistics for $300." He said, "No other states are doing it, are they?" I said, "Well, as far as I know the only place which does not compile statistics is the Fiji Islands." It is safe to say he did not make the recommendation.

God is with you. It is God's work which you are doing. You are the Good Samaritans of the state, and the State Board of Health is proud of your progress.

SEWAGE DISPOSAL.

AN ADDRESS GIVEN BY GEORGE C. WHIPPLE TO THE SCHOOL OF INSTRUCTION OF HEALTH OFFICERS, BURLINGTON, VT., JULY 10, 1906.

The sewage of a city may be said to consist of the public water supply soiled with the waste products of human life and with various refuse from household and factory, plus a certain amount of ground water which has leaked into the sewers, and in some cases increased by variable quantities of rain water and street wash. Fecal matter, urine, sink slops, fragments of garbage, soaps, fats, paper, matches, street dust, horse manure, dyestuffs, tannery wastes, brewery slops, coal-tar products from gas works, and all sorts of trade wastes contribute to the ever-changing flood of foul liquid flowing in the sewers. Disintegrating and decomposing as it flows, the sewage gradually becomes a more or less homogeneous suspension of fine particles in water containing organic and mineral matter in solution. The longer the sewage flows or stands the more disintegrated become the constituents; fecal matter, paper, etc., become unrecognizable as such. Bacteria increase enormously and assist in the breaking down of the complex organic compounds, which is desirable and which is in fact inevitable, but which is also the cause of offensive odors, and it goes without saying, these are not desirable. The sewage gradually loses its oxygen and from a fresh condi-

Digitized by Google

tion it becomes first stale and then septic. Mingled with the putrefying organic matter and the swarming hosts of bacteria there may be also many bacteria which have come from persons sick with typhoid fever, dysentery, tuberculosis, and other diseases, and which retain their virulence. That is the chief reason why sewage is dangerous.

The flow of sewage in the main sewer of a city is constantly changing in volume and in strength. It varies from hour to hour; the night flow is different from the day flow. It varies from day to day; the sewage of Sunday is different from the other days. The Monday forenoon wash and the Saturday night bath are both evidenced in the flow of sewage. It varies also from season to season. In separate systems, from which storm water is excluded, there is a surprising regularity in the variations, but in the combined system storm water often exerts the controlling influence on the quantity and quality of sewage and obscures the daily and hourly changes.

The sewages of no two cities are alike. Differences in the habits of the people with reference to the use of water, differences in industries, and differences in a dozen other conditions which might be mentioned, combine to give each sewage an individuality. It is possible, of course, to classify cities with respect to their sewages, but there is no need of going into this at this time. As health officers, I assume that you know what sewage is, and I have said as much as I have merely as an introduction to the first point I wish to make; namely, that the sewage problem of any community must be considered by itself and the method of disposal must be studied out for each city or town. Because a septic tank is a good thing in one city, it does not follow that septic tanks should blossom "like the rose," in every town in the state; and because one city can get along with a cheap method of purification, it does not follow that another city would be unwise in adopting a more costly plan. What is needed in every case is the application of certain principles which are gradually becoming established. These general principles every health officer should know, for often he is the official to take the initiative in local matters pertaining to this subject. Details of methods you do not need to study with great care; you may rightly assume that to look after them is the function of the engineer, and that matters involving comparisons of different systems, estimates of costs, etc., had best be referred to an expert. In a general way, however, you should be conversant with different methods of sewage disposal, their mode of operation, their efficiency and their relative advantages.

An engineering friend of mine was once asked what the best place was for the ultimate disposal of the sewage of a city in the western part of Massachusetts and he promptly replied, "The Atlantic ocean." "All the rivers flow into the sea" and in a sense all sewage ultimately reaches the ocean,—at least the liquid portion does. (The statement is not true, however, of all the constituents of sewage.) The problem then is how to get the sewage to the sea in the cheapest manner and with the least nuisance. Cities situated on the coast can solve the problem simply, and so can inland cities on the shores of large lakes or large rivers; but inland cities, remote from large

Digitized by Google

streams are often "up against it," as the saying goes. They cannot afford to build sewers to the sea and of necessity are obliged to utilize the water courses. This can be done with safety up to a certain limit, but finally a point is reached where difficulty is encountered. And as the disproportion increases between the size of the city and the volume of water available for dilution the difficulty is enhanced.

When raw sewage is allowed to flow into the stream or lake or river, it is said to be disposed of by dilution. From motives of economy this method is the one most used in this country, sometimes without harm to any one, sometimes to the destruction of vast natural resources and property interests, and too often at the sacrifice of many human lives.

The disposal of sewage must be considered from two points of view; namely, from that of nuisance and from that of public health. It is important to keep this difference clearly in mind, as it will often prevent one from fallacious reasoning. Bad smells, turbidity, color, greasy scums, may cause nuisances, but they do not necessarily imply the presence of typhoid fever germs; while freedom from odor does not imply safety. Sewage may be so purified as to be inoffensive, but even after treatment it may be a dangerous liquid to put into a stream used for drinking purposes. A river may purify itself so far as outward appearances go, but it is not safe to depend upon the self-purification of running water when it comes to the question of using it as a public water supply.

It is often stated that a river can receive a certain amount of sewage and give no trouble. Thus it has been found in Massachusetts that if the ordinary low flow of the stream is less than 3.5 cubic feet per second per 1,000 population a nuisance is pretty sure to result, while a nuisance seldom occurs if the flow exceeds 6.0 cubic feet per second. As an average figure for New England it may be said that rivers can receive raw domestic sewage without giving trouble, if the ordinary low flow is at least 4.75 cubic feet per second per 1,000 population connected with the sewers. This is equivalent to about 3,000 gallons per capita daily. Another way of stating the same thing would be to say that no offense would be caused down stream if the sewered population did not exceed 57 per square mile. Such a figure as this takes into account only the question of nuisance and has no bearing whatever on the question of stream contamination from the water supply standpoint.

At the time when many of the sewer systems of American cities were designed the germ theory was unknown and the spread of disease by contaminated water was not considered. Bacteriology has changed this status. We now know that for a city to cast its sewage into a lake and then use the lake water without filtration for its public supply is as dangerous as for a person to jump off backwards from a trolley car in motion. A city which does this is indeed looking backward and sooner or later it is sure to get a bump. Witness your own city of Burlington, witness Chicago, Cleveland, Buffalo, and other lake cities. But there is one thing worse for a city to do than to drink its own diluted sewage, and that is to put it into rivers

Digitized by Google

so that other people have to drink it. The subject of stream contamination by municipalities has never received the consideration it deserves, either from the legal or moral standpoint. As sanitarians we appreciate the evil, and as engineers we know that the evil is subject to correction, but as citizens we have not learned the lesson of municipal cleanliness or our obligations to our fellow men. In sanitary matters every man is his brother's keeper.

I shall not dwell on the disposal of sewage by dilution. There are many phases to the problem, and to enter upon them would involve a general consideration of the subject of stream pollution,—a topic big enough for the entire lecture.

If I rightly understand your sanitary conditions here in Vermont, you have few pressing sewage disposal problems other than those which are connected with the pollution of water supplies. I am not familiar with the details of any of these problems, but there is little doubt in my mind that most of them can be solved better and cheaper at the present time by giving attention to water filtration rather than to sewage disposal. To so purify sewage that it may be safely turned into a stream used for drinking purposes is difficult and expensive,—more expensive ordinarily than to filter the water. The steps recently taken by your State Board of Health to purify the streams of the state is one to be highly commended; nevertheless I believe that attention should not be given to the disposal of sewage at the expense of water filtration.

I will now take up in some detail the various methods of sewage disposal and will show you a number of lantern slides of photographs taken during a recent visit to England.

CLASSIFICATION OF METHODS OF SEWAGE DISPOSAL.

The processes involved in sewage purification may be divided into three principal groups, namely:—

1. Preparatory Processes.
2. Purification Processes.
3. Finishing Processes.

In one sense these are all purification processes, as they all tend to make the liquid sewage less offensive. Each group has many subdivisions, and the various methods are used in all sorts of combinations.

CLASSIFICATION OF METHODS.

1. *Preparatory Processes.*—Screens, Roughing Filters, Detritus Tanks, Plain Settling Tanks, Chemical Precipitation Tanks, Septic Tanks.

2. *Purification Processes.*—Sub-Surface Irrigation, Broad Irrigation, Intermittent Filtration, Contact Beds, Sprinkling Filters.

3. *Finishing Processes.*—For Clarification: Settling Basins, Coarse Fil-

Digitized by Google

tration; For Bacterial Improvement: Land Treatment, Sand Filtration, Mechanical Filtration, Disinfection.

In sewage purification there is a gradual separation of the solid matter from the liquid; the sludge is ultimately disposed of in one way and the more or less purified liquid sewage in another. Thus two general groups must be provided for convenience of discussion, namely:—

4. *Disposal of Sludge.*
5. *Disposal of Purified Effluent.*

To these may be added a sixth, namely:—

6. *Disposal of Storm Water.*

PREPARATORY PROCESSES.

Raw sewage cannot be economically purified by the direct application of any single process. This is on account of the complex character of its constituents. A liquid which contains substances both organic and inorganic, in which a part of each is in solution and another part in suspension, and in which the suspended particles vary in size from banana skins down to the ultra microscopic, a liquid which is continually altering in composition and in decomposition as well, and a liquid continually varying not only in quality but in quantity, cannot be easily rendered free of its obnoxious ingredients. Some form of preliminary treatment is therefore universally used. This may be a mere screening or filtering out of the coarse suspended matter, or it may be a settling out of the heavier particles in sedimentation tanks through the influence of gravity. Chemical or even biological agencies may be made to assist the action, but essentially all the preparatory processes are of a physical character. They have for their object the removal of suspended matter in order that the remaining liquid may be more easily purified by subsequent treatment.

Screening.

Little need be said about screening, except that in large plants the use of revolving inclined screens with automatic cleaning devices has rendered this initial step in the process more effective than the old-fashioned bar screens, or cage screens, which were lifted and cleaned by hand. Engineers appear to be taking a new interest in the matter of screening; finer and more efficient screens are being advocated, and in the near future important developments may be looked for. In many places the screened material is burnt under boilers, mixed with coal or in some cases with the city garbage, and the power generated is used in various ways around the works.

Roughing Filters.

Roughing filters are used but little, although they have been studied experimentally in a number of places. As a means of removing suspended

Digitized by Google

matter they are far less economical and much more troublesome than settling tanks. Where they have been used it has generally been in connection with other forms of preparatory treatment.

Detritus Tanks.

The use of grit chambers, or catch pits, or detritus tanks, or roughing tanks, or settling tanks at high velocities, as they are variously called, is very common. Their usefulness depends largely upon the character of the raw sewage. When the amount of suspended mineral matter is large, as it often is in cities sewered on the combined system, or in places where the amount of manufacturing waste is large, detritus tanks so arranged that they may be easily cleaned without interrupting the flow of sewage are advantageous. They are also helpful in small plants where septic tanks are used. Under certain conditions, where the screening process is efficient and where sedimentation takes place in a manner to be described, the detritus tank may be dispensed with.

The time allowed for settlement in detritus tanks varies all the way from a few minutes to several hours. Often the sewage reaches the works in a septic condition, and were it not for frequent cleaning the sludge would undergo septic action, which would tend to interfere with the usefulness of the tank for sedimentation at high velocities.

Plain Sedimentation.

Plain sedimentation at low velocities, unaccompanied by the use of chemicals or by septic action, is but little used, although in many settling tanks, if not in most of them, the chemical and biological changes are of secondary importance. In any of the preparatory tank processes the settling of the suspended matter by gravity is the controlling function. Within the last few years there has been a reaction against the too exalted ideas of bacterial agencies as originally set forth, and a recognition of the fact that the separation of sludge from sewage is essentially a physical problem. Plain sedimentation modified, as mentioned beyond, is likely to play an important part in the future.

Chemical Precipitation.

Twenty-five years ago chemical precipitation was very largely used in England. Lime, or lime and iron, or alum, were considered as necessary accompaniments of the settling process. In many cases this chemical precipitation was the only means of purification used, the tank effluent being discharged directly into river or sea, or turned upon land. This method has to a very great extent been superseded by other modes of treatment, but even to-day there are some large cities near the coast which adhere to the old system,—notably, London, Glasgow, and Dublin, the last named city having new works just about to be put in operation.

The use of chemical precipitation as a preparatory process, however, is quite another matter, and instead of going out of use it seems to be gaining

Digitized by Google

favor, especially in those cities where the amount of manufacturing waste is large. In order for contact beds or sprinkling filters to operate satisfactorily and economically the amount of suspended matter must be reduced to a minimum, fats must be kept down and the colloidal substances precipitated as far as possible. In some cases this appears to be more easily accomplished by the use of chemicals than by plain or septic sedimentation.

Although in few instances have septic tanks been given up for, or been supplemented by, the use of chemicals, engineers and inspectors appear to be coming back to the idea of using precipitants in connection with the preparatory treatment of sewages heavily laden with manufacturing wastes.

Septic Sedimentation.

The septic tank is still the subject of more or less controversy. It still has its enthusiastic advocates and opponents, but present-day discussions are tempered with reason and are based more on fact and less on theory than in earlier days. One thing seems certain, the septic tank has earned its right to exist. It has not accomplished all that its originator first claimed; it does not "do away with sludge"; it does not fit the liquid sewage for further purification; it is not without nuisance. But, on the other hand, if it does not entirely eliminate sludge, it reduces its amount, and alters its character; while if it does not help future treatment of the liquid sewage, it at least does not hinder it. Its chief advantage is its effect on the sludge; a disadvantage is the frequent nuisance from odor.

That the septic tank is a nuisance in many places appears to be well established. The extent of the nuisance depends altogether upon the local conditions—the character of the sewage, the size of the plant, the period of septicity, the nature of the subsequent purification process, the topography of the surroundings, the weather conditions, etc. It would be unjust to suppose that the septic tank is always and necessarily a nuisance to neighboring residents. Often it is not.

The septic process is an anaerobic or putrefactive one, and putrefaction, of course, involves the formation of odoriferous gases and offensive substances. Whether or not these become a nuisance depends upon their amount and the opportunity which is given them to escape into the atmosphere. Covers for septic tanks, which were part of the original idea, somewhat prevent the spread of bad odors, but covers are not necessary to the efficiency of the process, are expensive and even dangerous on account of the explosive character of some of the gases liberated. Already several fatal accidents have occurred in England. Open septic tanks are often free of nuisance. In winter the septic action is not as vigorous as in summer, and the products of decomposition are less, while in summer the septic tanks are sometimes covered with a firm, dense scum, which to a certain extent prevents the gases from diffusing into the atmosphere.

When the odors do not escape from the tanks at the surface, however, the liquid effluent is likely to be offensive, and if this effluent is sprayed into the air or poured in thin films over a sprinkling filter, full opportunity

Digitized by Google

is given for the liberation of bad odors. In fact, it may be said whatever serious nuisance arises from the septic tank occurs when it is used in connection with a sprinkling filter. Sanitary inspectors and representatives of the Local Government Board and the Royal Commission on Sewage Disposal were all emphatic in expressing their ideas as to the amount and frequency of bad odors due to this combination. From conversation with these officials, and from personal observation, the speaker gathered the opinion that under English conditions sprinkling filters treating septic sewage cause enough nuisance to substantially depreciate the value of property for residential purposes within a radius of a quarter of a mile from the works in the case of small plants, or almost half a mile from the works in the case of large plants. If the sewage works were situated in a valley down which the prevailing winds blow in summer the nuisance occasionally extends to greater distances. Every plant must be judged for itself, however, and the above estimate has only a very general application. In America, with more dilute sewages, the circles of influence might be less extensive. Meteorological conditions have a very important effect on the transmission of bad odors. On warm, muggy days with a moderate breeze a sewage plant may be a decided nuisance, while during clear, cool weather it may attract no attention whatever. This fact is too often overlooked by visitors to sewage works.

Practical experience with the septic tank has shown that it tends to reduce the amount of sludge. The suspended mineral matter in sewage is, of course, unchanged in the septic tank, although much of it settles through the action of gravity. A large part of the organic matter is also unaffected by the bacterial process, or at any rate, remains in the tank as organic matter, though perhaps modified in character. Some of the organic matter in suspension, however, is liquefied or gasified, or, to use a common term, is digested. The amount of digested matter may be taken ordinarily as between one quarter and one third of the suspended solids, and therefore the amount of sludge is less by that amount. Some engineers believe that a fifteen per cent saving of sludge is all that can be expected of a septic tank through digestion. Much depends, of course, upon the character of the sewage. Apparently domestic sewage is better adapted to the septic treatment than sewages rich in trade wastes.

Long standing in the septic tank tends to make the sludge more compact. Speaking roughly it may be said to reduce the volume from one third to one half. The character of the sludge becomes altered. This was strikingly illustrated to the speaker by Mr. John D. Watson, the engineer of the Birmingham Sewage Works. By the aid of a long pole he withdrew portions of sludge from a settling tank which had been in operation but one week and from a septic tank which had not been cleaned for three years. The former was fibrous, gray in color, and had a marked offensive sewage odor, while the latter was black, granular, and almost odorless. Mr. Watson stated that the septic sludge could be spread upon land without offense, while the application of the sludge from the plain settling tank gave rise to

Digitized by Google

very disagreeable odors. To do away with the latter he has been for some time in the habit of pumping his settled sludge into the septic tanks for further treatment.

Granting that the liquid septic effluent has no virtue and may be a nuisance when applied to sprinkling filters, and granting that the use of the septic tank has a beneficial effect on the sludge, a logical improvement would appear to be to so modify the manner of using the septic tank as to maintain the advantage and eliminate the nuisance. This is a matter now being considered by some of the English investigators. The best method of accomplishing it appears to be by the use of plain sedimentation for the sewage and septic treatment for the sludge alone. In other words, the idea is to treat the liquid portions aerobically and the solid portions anaerobically. This is scientifically correct in principle, as the beneficial anaerobic action is concerned with the carbohydrates, which are chiefly in suspension. In no case with which the speaker is familiar has this result been actually accomplished, but in a number of cases the idea has been partially applied. In the case of Birmingham, just mentioned, the sewage passes somewhat rapidly through settling basins which are cleaned at frequent intervals, most of the liquid sewage being allowed to flow to certain septic tanks, while the sludge is pumped to other septic tanks for further digestion. This takes care of the sludge, but it does not leave the sewage unseptic when it goes to the sprinkling filters.

After the preparatory processes the treatment of sewage is conducted along two lines which must be followed separately, *i. e.*, the purification of the liquid sewage containing the residual suspended matter, and the disposal of the sludge.

PURIFICATION PROCESSES.

All processes which essentially alter the nature of sewage are bio-chemical. Bacterial methods of treatment are not new. The changes which took place in sewage by the older methods of sub-surface irrigation, broad irrigation, and intermittent filtration were just as much bacterial as the newer methods of treatment by contact beds and sprinkling filters. The only difference appears to be that in the older methods the bacterial processes were not watched, while in the latter they are carefully controlled.

Sub-Surface Irrigation.

Sub-surface irrigation consists in applying sewage to land through perforated pipes laid beneath the surface. The method is an excellent one for individual houses and small institutions, but it is not applicable to the disposal of the sewage of entire communities for the reasons that large areas are required and that the drains are liable to clog up, causing heavy expenses for maintenance and operation. Furthermore, the successful operation of the method of sub-surface irrigation requires light, open, sandy soil, which can seldom be obtained at the place where it is wanted.

Digitized by Google

Broad Irrigation.

This method is commonly spoken of as "land treatment," "broad irrigation," or "sewage farming." It consists of the application of sewage to land in comparatively small amounts in connection with growing crops, the rate of application being so adjusted that the sewage acts as an irrigant and fertilizer. Where large areas of suitable land can be obtained at low cost this method of sewage disposal is often an economical and satisfactory one. It is used to a considerable extent on the continent. The sewage of Berlin, Paris, and other large cities is taken care of in this way. Peculiar conditions are necessary for successful operation, however, such as cheap land, cheap labor, light soil, and low rainfall, especially at harvest time.

Land treatment in England has not proved very successful, as the soil is not well adapted to it. The old rules of the Local Government Board required that where this method was used at least one acre of land should be provided for each 1,000 people. We were told by the inspectors, however, that in many cases it requires ten times as much land as this to properly take care of the sewage. If more sewage is applied than the land can take, the soil becomes "sewage sick," that is, becomes clogged and unable to effect purification. During our trip we saw many sewage fields in this condition.

Experience has shown that the value of sewage as a fertilizer is very much less than used to be supposed. Sewage sludge has some manurial value, but liquid sewage contains such small amounts of substances of fertilizing value that they cannot be profitably utilized. Whatever advantage accrues from the use of sewage in connection with farming operations is due far more to the water than to the solid constituents of the sewage. The idea so often expressed that sewage can be "utilized" at a profit is a dream which has never materialized.

There is a further objection to the use of sewage in connection with agriculture which has recently been made by sanitarians, namely, the danger that may come from the infection of certain vegetables which are used uncooked, as, for instance, lettuce, celery, etc.

Intermittent Sand Filtration.

Intermittent sand filtration consists in applying sewage to definite areas of porous land at regular intervals. Sometimes suitable land can be found ready for the purpose, but often specially prepared beds are necessary. The process of application is an intermittent one. The sewage is flooded over the surface and allowed to soak into the sand, after which several hours elapse during which the bed is exposed to the air. The action which takes place is a bio-chemical one and is essentially aerobic in character.

The results obtained by a well-regulated intermittent sand filtration plant are better than can be obtained by any other known process, and when favorable conditions can be obtained this process is likewise the most economical one which can be used. Unless the conditions are favorable,

Digitized by Google

however, its use will result in failure and expense. Intermittent filtration can often be supplemented by cultivation of crops, but the agricultural feature is an incidental one.

Contact Beds.

Contact beds consist of water-tight compartments, generally built of concrete, filled with comparatively coarse material such as coke, clinker, or broken stone, and having, of course, relatively large spaces between the grains. Sewage is applied to them at regular intervals of a few hours until the bed is full, a brief period of rest is given, after which the outlet gate is opened and the liquid allowed to slowly drain away. Then the bed stands empty for a certain period and the cycle begins again. Often contact beds are operated in series, the effluent from the first being allowed to flow to a second, and the effluent from the second to a third. The secondary beds are made of finer grained material than the primary beds, and the tertiary beds are still finer. The sewage is generally applied at the top, but in some instances at the bottom. Surface distribution is made by wooden troughs placed in or over the material, or else the material itself is ridged into channels.

The action of a contact bed is partly physical and partly bio-chemical. If the process is properly carried out, the effluent from the primary beds is fairly clear and the effluent from the secondary beds almost entirely so. This means that the suspended matter has been left in the pores of the bed. The effluent is also non-putrescent and to some extent nitrified, indicating that bacterial action has taken place. Contact beds have a controlled respiration, air being drawn into the bed as the sewage leaves it. The oxygen thus admitted acts on the suspended organic matter left in the interstices, and under the influence of aerobic bacteria, changes it, or a part of it at least, to the condition of a stable humus with the formation of nitrites and nitrates. When the beds stand full the oxygen may become exhausted and for a brief interval anaerobic conditions may prevail. It is upon the oxidation processes, however, that the actions of the contact beds chiefly depend.

The rate of filtration of a contact bed depends upon the character of the sewage, the size of the grain, the depth of the bed, the amount of clogging, etc. A common rate in England is 500,000 gallons per acre daily; with weak sewages and with efficient preparatory treatment it may be nearly double this amount, but with the strong English sewages it is sometimes unsafe to apply more than 300,000 gallons per acre per day. The rules of the Local Government Board of England prescribe that the rate shall not exceed 325,000 gallons per acre daily for each foot in depth when the effluent is to have subsequent treatment. Double contact beds are required when it is not. Contact beds naturally lose their capacity as they become clogged. After a time it becomes necessary to remove the filtering material, wash off the accumulations and restore it to the beds. At Manchester, Burnley, Hampton, and elsewhere, the contact beds are now being cleaned and renewed. The coke or clinker filling is generally cleaned by washing and

Digitized by Google

screening through cylindrical revolving screens, which separate the material into different sizes. A washing apparatus with suitable conveyors is just as essential a part of a sewage purification works where contact beds are used as is a sand washer in a modern filtration plant. Thus far those which have been used have been crude and of a temporary character, and there is a chance for decided improvement in their design. The frequency with which contact beds have to be renovated cannot now be determined with certainty, as many factors are involved and the data are as yet insufficient. There seems to be a feeling among English engineers, however, that primary beds operating at average rates on ordinary domestic sewage may be counted upon to last from three to seven years, while secondary beds may last from eight to fifteen years.

Properly operated double contact beds yield effluents which are reasonably free of suspended matter and color, and which are nonputrescible. Many contact beds have failed because they have been overworked or because the regimen of operation has not been suited to local conditions.

Contact beds have one advantage over other purification processes. Their depth can be varied at will, as their efficiency is not so dependent upon depth as in the case of sprinkling filters. They have been built as shallow as two feet. When sewage works are so located that there is little available head, therefore, contact beds are especially applicable. They can be operated also with less nuisance from odor than sprinkling filters can, especially when filled from the bottom. For small gravity installations contact beds are especially useful, as they can be operated with comparatively little attention.

Sprinkling Filters.

Perhaps the most important advance in sewage disposal during the last few years is the general recognition of the sprinkling filter as an efficient means of purification. This is also called "trickling filter," "continuous filter" and "intermittent continuous filter." The term "percolating bed" has also been suggested, as well as "spray filter." A sprinkling filter, like a contact bed, is composed of relatively coarse material. Its operation, however, is very different. Instead of being worked on the fill and draw principle, the sewage is continuously applied at the surface, either as a spray or in a thin sheet. The outlet gate is kept open and the sewage trickles down through the bed and passes out of the under-drains which are made large and open so as to insure a thorough aeration of the entire bed. The process is emphatically an aerobic one. Air is continuously entering the bed with the water and passing in or out through the under-drains, and sometimes through the sides of the filter. As the liquid flows rapidly through the bed and as no sewage is supposed to accumulate in the bed, there is really no need of side walls, and in some cases these are omitted, the material being allowed to take its natural slope. More often, however, loose walls of brick or stone are built up to retain the material.

The filtering material used is generally coke, clinker, or broken stone. There is some difference of opinion as to the best size to be used. Some

Digitized by Google

engineers prefer what are called "fine grain beds," in which the diameters of the particles lie between one eighth inch and one inch. In rare instances even coarser material is used. Both fine grain and coarse grain filters have their advocates, but the latter appear to be generally preferred. Fine grain filters yield clearer effluents, but as a result they become clogged, while aeration is rendered more difficult. Coarse grain filters, on the other hand, do not clog as readily and therefore their life is longer and the ventilation better, but the effluent is more or less turbid.

The application of the sewage to the bed is a matter of great importance and one which has been carefully studied by English engineers. Many patented devices are on the market for accomplishing it. As aeration is important, the more the applied sewage can be subdivided into small drops the more efficient will be the process. One of the earliest ways of applying the sewage was to allow it to flow through small holes in troughs placed over the surface of the bed. This method has been found to have its disadvantages. The holes are liable to become filled up and the troughs tend to get out of level, thereby causing unequal distribution of the sewage.

Rotary sprinklers are much in vogue in England. They consist of four arms mounted on a central vertical shaft so that they revolve in a horizontal plane immediately above the surface of the bed. The arms are perforated only on one side, and the sewage being discharged through them, the apparatus is made to rotate on the principle of Barker's mill. These rotary sprinklers are now so common in England, especially for small plants, that they have become a characteristic feature of the landscape as one looks from the car windows in certain sections of the country. Some of the largest rotary sprinklers are 120 feet in diameter and are operated with power instead of in the manner above indicated. In some cases the end of the sprinkler is carried on a circular track laid around the bed.

Some of the objections which have been raised against the use of rotary sprinklers are that the holes tend to become clogged, and that the wind interferes somewhat with their rotation. They also require circular instead of rectangular beds, although in some cases several rotary sprinklers have been placed in large rectangular beds, the dead corners being sprayed from fixed nozzles. The intermittent application of sewage which is obtained by the use of the rotary sprinkler is thought by some to have decided advantages.

Instead of using rotary sprinklers the sewage is sometimes applied to rectangular beds by means of a perforated pipe mounted so as to travel back and forth laterally. This is the arrangement used at Hanley. The pipe is carried on trucks at the ends which run on rails along the sides, and which are operated by electricity.

The movable devices appear to be satisfactory for small installations, but they cannot be applied to large beds. When filters reach a size of an acre or more permanent jets give a better distribution of the sewage. The strainers recently devised for the Columbus plant appear to be a decided improvement over any in use in England. The sprays are generally operated

Digitized by Google

under a head of about four feet and the applied sewage usually rises to a height of one to two feet above the surface of the bed.

The purification which takes place in the sprinkling filter is due entirely to the action of aerobic bacteria. The suspended matter in the applied sewage settles on the grains as the liquid passes through until gelatinous films are formed. Being liberally supplied with air the organic matter gradually undergoes decomposition and changes its character, becoming somewhat granular and more like the condition of ordinary top soil. When the accumulation has reached a certain point films of this accumulated matter break away from the grains and are discharged with the effluent. To a certain extent this process is continually going on, so that the effluent is never wholly free from turbidity, but it has been noticed that there is an unloading of the accumulated sediment at more or less regular intervals. This may be caused by an accelerated rate, by conditions which affect the bacterial action, and by the action of worms. This unloading of a sprinkling filter, which was at first thought to be a serious objection, is now believed to be its most important advantage, as it prolongs the life of the bed. There are coarse grain sprinkling filters now in use which are apparently in good condition. How much longer these filters can be operated is something that engineers will watch with interest. It would be a mistake to suppose that they will last indefinitely, but if the material is properly chosen and the sewage is applied at the optimum rate, there seems to be no reason why they may not run ten to fifteen years before they are renewed.

The rate at which sewage can be applied to sprinkling filters varies according to the character of the sewage, the depth of the filter, the size of the grains, etc. Deep filters can operate at higher rates than shallow filters, and are generally to be preferred. Filters less than five feet deep do not operate satisfactorily, as the time required for the sewage to flow through them is too short. On the other hand, filters deeper than about twelve feet may involve difficulties in ventilation and in matters of engineering. Depths of seven to eight feet are generally preferred. Experiment has shown that between five and twelve feet the amount of sewage which can be applied in a unit of time varies approximately with the depth,—that is to say, a ten-foot filter can take twice as much sewage as a five-foot filter. The rate which will give the most efficient purification varies inversely as the strength of the sewage. It has been found that for any depth of a sprinkling filter there is a more or less definite amount of organic matter which must be applied in a unit of time to give the best results; in other words, the size of a sprinkling filter is governed fully as much by the number of people contributing sewage to it as by the number of gallons of sewage applied. The rules of the Local Government Board prescribe a limiting rate of 325,000 gallons daily per acre for each foot of depth when the effluent is to receive further treatment, and 162,500 gallons per acre daily when the effluent is to be directly discharged to the river. Considered on the basis of domestic sewage this would be equivalent respectively to an application of thirty grams and fifteen grams per square meter daily of

Digitized by Google

total nitrogen. Experiments made at Columbus, at Lawrence, and elsewhere, appear to indicate that in order to obtain effluents which are well nitrified and which are not putrescible the amount of nitrogen applied should not exceed twenty-five grams per cubic meter daily, or, in other words, that each acre of a sprinkling filter should not receive sewage from more than about 2,000 people for each foot of depth. Carbonaceous matter must be considered, however, as well as the nitrogenous matter, and there is an opportunity for further study in connection with this subject.

If sprinkling filters are properly operated they will yield an effluent which is non-putrescible and well nitrified. If coarse grains have been used it will contain more or less suspended matter for reasons above mentioned, but this suspended matter will be very different in character from that present in the raw sewage.

The purification effected by sprinkling filters seems to be generally better than that obtained by contact beds.

The chief advantages of sprinkling filters are that the purification is good, that the effluents are well nitrified and non-putrescible, that the filters do not become clogged except at very long intervals, and that the rate of application of the sewage is considerably greater than can be obtained by any other process, thereby reducing the amount of area required. Certain disadvantages are the nuisance occasionally produced by spraying septic tank effluents, and the difficulty of properly applying the sewage during the cold weather of winter. The odor nuisance may be avoided to a practical extent, however, by reducing the degree of septicity of the sewage; that is, by spraying stale sewage instead of septic sewage. Experiments at Columbus indicated that sprinkling filters with permanent jets can be operated successfully during cold weather, but this is something which has not yet been tested on a large scale. The idea has been suggested that in case springling filters fail during the winter months they may be so arranged as to be operated as contact beds during the cold weather. The climate of England is mild even during the winter, and therefore this is a problem which it has not been necessary to solve in that country. In our southern states there would be no difficulty at all in using sprinkling filters at all seasons, and even in the north there is reason to believe that ways and means will be found for successfully operating them.

Results Obtained by Purification Processes.

The success of intermittent filtration and broad irrigation in purifying sewage where suitable conditions for their application exist has been demonstrated by many years of experience. The practical application of contact beds and sprinkling filters covers a much shorter period of time, yet it has been long enough to demonstrate that these newer processes may be successfully depended upon if the plants are properly designed and carefully operated. The degree of purification obtained varies greatly under different conditions. Sprinkling filters generally give somewhat higher percentage efficiencies than contact beds.

Digitized by Google

The new processes of sewage purification are sometimes spoken of as the "intensified bacterial processes." That this term is well justified, in so far as it relates to the size of the works, seems evident from the following figures which give in a very approximate manner the relative sizes of the plants required by the four important methods of purification:—

APPROXIMATE DATA AS TO SIZES OF PURIFICATION PLANTS.

	Nitrogen in grams Sq. meter daily.	Rate of filtration. Gallons per acre daily.	Population per acre.	Number of acres required per 1,000 people.
Broad irrigation,	1	3,000 to 15,000	300	3.3
Intermittent filtration,	2.5	30,000 to 100,000	700	1.4
Contact beds 5 feet deep,	20	300,000 to 800,000	5,000	0.2
Sprinkling filters, 10 feet deep,	75	1,000,000 to 2,500,000	20,000	0.05

It will be seen from these figures that more than twenty times as much domestic sewage per unit of area can be treated by sprinkling filters as by the method of intermittent filtration. The results with the new processes, to be sure, are not quite as satisfactory, but the effluents are stable and fit to be discharged into streams not used for purposes of water supply. The above figures, showing the approximate sizes of plants, are not to be taken as applicable to any particular case, especially when manufacturing wastes are included. Each local problem must be studied by itself. In some instances the number of acres required might be double the figures given; often the area might be considerably less. The rate of sprinkling filters depends largely upon the size of grain used. In some recent American designs much higher rates have been recommended than those given above.

FINISHING PROCESSES.

The effluents obtained from sub-surface irrigation, broad irrigation, and intermittent filtration methods require no further treatment if the plants are properly designed and carefully operated. They are usually clear enough for all practical purposes, are non-putrescible and reasonably satisfactory from the bacterial standpoint. This is not true, however, of effluents from contact beds or sprinkling filters. Contact effluents, as well as those from fine grain sprinkling filters, may be clear and even non-putrescible, but bacteriologically they are not good enough to be turned into streams which are used for public water supply purposes, or into tidal estuaries, where there is danger that oysters may be contaminated. The effluents of coarse grain sprinkling filters are not clear, but contain large amounts of suspended matter as already pointed out.

Clarification.

A finishing process is therefore necessary when coarse grain sprinkling filters are used. As the suspended matter in these effluents is comparatively

Digitized by Google

coarse and heavy it settles readily and may be removed by the use of shallow settling basins with a short period of sedimentation, or by rough filtration through coarse material, or both. Dortmund settling tanks also have been tried with success. A popular method in England at the present time is to allow the sprinkler effluent to pass through a shallow settling basin, which has a narrow strip of coarse filtering material placed along the side near the outlet. The liquid is made to pass upwards through this rough filter before it is discharged. These settling basins and filters have to be cleaned at rather frequent intervals, a fact which has to be taken into account in figuring operating expenses. The sludge, however, is practically inoffensive and may be more easily handled than that from the settling tanks used for the raw sewage. In some instances the effluent from sprinkling filters is applied to land in order to clarify it, but this has usually been done in order to take advantage of land already owned. No new works are being constructed which involve this feature.

Bacterial Improvement.

Experiments which were made at the London works and elsewhere have shown that from the standpoint of contamination the effluent from sprinkling filters or from contact beds is but little better than that of the raw sewage, and that while the organic matter is eliminated from the sewage to such an extent that the liquid is non-putrescible, yet the number of intestinal bacteria and presumably the number of pathogenic bacteria, in case the sewage is infected, are not by any means eliminated though reduced somewhat in number. It is not safe therefore to turn the effluent from a contact bed or sprinkling filter into a stream which is to be used for drinking purposes at some point below the point of discharge. The danger of the contamination of oysters from sewage is now well recognized, and this will have an important bearing on the character of sewage effluents in many places.

In certain cases, therefore, supplementary processes are necessary to eliminate the danger of infection from sewage effluents. These may consist of disinfection, or of some one of the methods used for purifying water. Broad irrigation or intermittent filtration might be used. Mechanical filtration has also been suggested. The use of certain disinfectants, such as copper sulphate, chloride of lime, etc., have been studied experimentally, but so far as the speaker is informed they have not been practically used. This subject of supplementary treatment in order to minimize the danger from infection by sewage effluents is one which has not yet been as carefully studied as it seems likely to be in the near future.

SLUDGE DISPOSAL.

The disposal of sludge is the most difficult matter in connection with sewage disposal. The progress here has not been as rapid during the last few years as in connection with the treatment of liquid sewage. Managers and engineers all admit that the sludge problem is still *the problem* of

Digitized by Google

sewage disposal; nevertheless, there has been some advance made of late. The change from chemical precipitation to the use of septic tanks has very materially decreased the amount of sludge to be handled, and it has, moreover, changed the character of the sludge so that it need not now create as much nuisance as formerly.

There are three principal methods of sludge disposal: (1) Dumping at sea, (2) application to land, and (3) pressing into cakes. Carrying the sludge to sea and there dumping it is the most efficient means of getting rid of it. It is, however, the most expensive, and is not practicable except in a few cities favorably situated. Application to land, if it can be carried on in the immediate vicinity of the sewage works, is the cheapest method, but it is likely to create more or less nuisance. Mr. Watson's experience at Birmingham, already referred to, is very interesting in this connection. He has found that, while ordinary sludge from settling tanks cannot be spread upon land without creating offensive odors, sludge which has passed through the process of digestion in the septic tank is inoffensive when similarly disposed of. Such sludge which, in one instance, was spread upon a five-acre field to the depth of 1.5 feet gradually dried and settled until it consisted of a layer of what looked like ordinary top soil about six inches thick. It was thought at first that crops could be grown on the dried sludge, but this did not prove to be practicable unless earth was mixed with it.

Sludge cannot be easily pressed without the addition of lime, and septic sludge is more difficult to press than either the sludge from chemical precipitation tanks or from plain settling tanks. It requires more lime and more care in operation. Nevertheless, in some places it is done with apparent success.

The value of pressed sludge seldom equals the cost of lime and pressing. In some places where the pressed cake is used for manurial purposes the amounts received from the farmers just about pay the operating expenses, while in other cases the process is carried on at slight loss.

Pressed cake appears to have just about the same manurial value as an equal weight of barnyard manure. It has been found, however, that it does not give good results as a fertilizer when applied continuously year after year to the same piece of land. That is one reason why its sale usually drops off a few years after the sewage plant has been established.

Some sewage sludges are so rich in fats that it is practicable to use them for fuel, or even to recover the grease. The recovery of the grease does not interfere with the later use of sludge for fertilizer, as the nitrogen is not extracted. The sludge from the settling basins receiving the effluent of sprinkling filters is much less offensive than ordinary sludge. It can be applied to land with practically no nuisance.

DISPOSAL OF PURIFIED EFFLUENT.

The object of purifying sewage is chiefly to prevent it from being a nuisance to sight or smell when discharged into some body of water. In

Digitized by Google

certain instances it is further demanded that the effluent shall be satisfactory from a sanitary point of view in order to avoid danger of contamination of water supplies or oyster beds. The subject of sewage disposal by dilution and the effect of sewage effluents on the quality of the water in streams and tidal estuaries is so broad a one that it cannot be brought within the scope of this paper, and it is listed merely that it shall not be lost sight of in a general discussion of the subject.

DISPOSAL OF STORM WATER.

As so many of the English cities are sewered on the combined system, the disposal of storm water is an important part of any system of disposal. The rules of the Local Government Board of England require that sewage works shall be built large enough to treat twice the dry weather flow in case of separate systems and three times the dry weather flow in case of combined systems, at the rates prescribed on a previous page. A further treatment of storm water is required up to four volumes of dry weather flow in the case of separate systems, or three volumes in case of combined systems. The prescribed minimum rate of treatment on storm beds is 2,900,000 gallons per acre daily. In both cases, therefore, storm flows must be treated in one way or another up to a volume of six times the dry weather flow. An excess above this may be discharged directly in a stream without treatment.

Storm water is very commonly treated on beds of coarse material operated continuously as long as the storms last, but having long periods of rest between. In order to keep the beds in good condition, however, they are often allowed to receive sewage in small amounts during the dry periods, but care has to be taken that they are not clogged when needed for full duty. During times of storm the period of sedimentation is much reduced, so that suspended matter is often carried to the storm beds in rather large quantities. This, together with the grease which is often present in large amounts, may give rise to surface clogging. Storm-beds, therefore, require to be scraped at frequent intervals, or to have the upper layer of material removed and washed.

Instead of using coarse grain beds storm water is sometimes turned upon land. It is often the case that when contact beds or sprinkling filters have replaced the older process of land treatment, that the old areas are reserved for treatment of storm water.

Discussion by Prof. J. W. Votey, Burlington.

I did not come here expecting to discuss this paper. Mr. Whipple has covered the field in a very thorough manner and he has described in a very satisfactory way all of the present methods that are in use, both in this country and abroad, and he has brought out the fact that certain processes are adapted only to certain conditions; that each city has its characteristic sewage, depending very largely upon the character of the city itself, whether

Digitized by Google

it is a manufacturing or a residential city. There is, further, a very great difference in the character of manufacturing sewage, and it is that which largely determines the system to be adopted. The nature of the soil of the locality has considerable influence in determining the process to be adopted. One other thing to which he referred was the climatic limitation of all of the methods; the fact that the ice has bothered in many of the plants shows that the subject must be thoroughly investigated before a plant is installed. That is a point we are interested in here in Vermont. How many of these processes are practicable in our state? We know that the intermittent filter can be used in Massachusetts. Our conditions differ but little from Massachusetts. Some of the other processes could hardly be operated here, owing to our cold winters. When the treatment of sewage is to be undertaken anywhere, the first thing to consider is the exact character of the sewage, and then the soil conditions should be investigated. There is one other limitation that applies in a way to Vermont. We are more interested here in plants that are inexpensive. This is particularly true of the smaller cities and villages. They must first of all consider the cost, and this should include the cost of installing a plant and also the cost of operating the same.

Dr. H. D. Holton, Brattleboro.

Is sludge of any particular value as a fertilizer?

G. C. Whipple.

Yes, it has some value. I have learned of some experiments carried on in England for six or eight years. This pressed sewage was carried onto the farm, and they found it had the same value as barnyard manure. It gave very good results the first year. It would increase the amount of produce raised by a large per cent. The second year there was a little falling off of production, and the third year the falling off was noticeable. Any additional application after the third year was found to be of no avail. The farmers are very glad to get it the first year and are willing and glad to pay for it. The second year they are willing to take it off, if they can get it for nothing. And the third year they want the authorities to pay for the carting of it.

Dr. H. D. Holton.

Do I understand that these coarser filters are not of much value?

G. C. Whipple.

When sewage passes through fine filters the effluent is satisfactory from a bacterial standpoint, but not in these coarser filters. It is the fine strain which you want to protect your water supplies.

Dr. H. D. Holton.

What would be the expense per acre of sand filtration?

Digitized by Google

G. C. Whipple.

I could not give you that off-hand. It depends upon how far you have got to cart your sand, and it all depends upon conditions.

Dr. C. S. Caverly, Rutland.

How often does the surface of an intermittent filter have to be cleaned?

G. C. Whipple.

Anywhere from a few weeks up to two or three times each season.

Dr. C. S. Caverly.

How much is taken off?

G. C. Whipple.

Sometimes they rake it off, but it is generally one half inch or so.

PUBLIC OPINION AND PREVENTIVE MEDICINE; OR CAUSE AND EFFECT IN SANITARY ADMINISTRATION.

BY H. L. STILLSON, HEALTH OFFICER OF BENNINGTON.

Mr. President, and Members of the Eighth School for Health Officers of Vermont:—

It would be presumptuous in me to attempt to instruct this assembly of professional gentlemen upon this or any other subject; but may I not hope to provoke a discussion of several important considerations in connection with my assigned topic, all of which may be of profit to us at this time?

Public opinion has been defined by a recent lexicographer to be: "The prevailing view in a given community on any matter of general concern or interest; also, such views collectively." For the purposes of this paper, public opinion will be characterized as an evanescent, impalpable force in the community which, whether reasonable or unreasonable, has the effect of law,—the higher law, from which it is virtually useless to appeal.

The first named is public opinion based upon belief or conviction, and applies largely to national affairs. Witness the unanimity of support accorded to the government because of its action in "stamping out" the yellow fever in Cuba; the surrender of administration of quarantine to a department last year, by the Gulf States, again a matter of yellow fever quarantine, and many other examples that might be quoted, wherein, with even a doubtful legality, the authorities have been sustained. Witness, also, the occur-

Digitized by Google

rences this year, with President Roosevelt to lead, where even the august Senate of these United States bowed its proud head to the decree of public opinion.

Under the heading of the second definition, might be called to witness the hindrances we have each encountered in sanitary administration; the senseless prejudices among the people which ought to be overcome, and the numerous instances of lawsuits to collect the meager sums allowed health officers by the statute, and the monthly and yearly statements "held up" and unpaid in Vermont cities and towns.

It is no part of the present effort to scientifically discuss "preventive medicine." This branch of the subject is incidental, and might be rendered as "preventive measures," did we omit the use of the antitoxic serums, and the necessity of vaccination.

The power of a correct public opinion will hardly be questioned at this day, but the reply to the question, "How obtained?" is capable of some discussion. Opinions may differ. The ephemeral nature of the force is well illustrated by the history of sanitation in Vermont; the most glowing example is the existence of the State Board of Health, and the Vermont Laboratory of Hygiene. Let us for a moment take a glance backward to the past. When, in the '70's of the nineteenth century the *Bennington Banner,* of which I happened to be the editor, took the stand that a state board of health was a necessity to Vermont's progress, the only physician in our section who gave the idea any public support was the late Lyman Rogers (afterward president of the Vermont State Medical Society), then a resident of Shaftsbury. A consensus of evidence, the witnesses being the editorial corps of that day, doubtless would reveal a like experience; but the leaven began to work, and, in due time, results were apparent. It is stated that fifteen years have elapsed since the national pure food law—just enacted by Congress, which goes into effect January 1, 1907—was first introduced; and I know it took fifteen years' agitation to compel the Legislature of Vermont to create a state board of health. The National Legislature has not made an appropriation; the Vermont Legislature, likewise, passed the enabling act for a state board of health *without* an appropriation; the same as it has since done with our pure food statute.

But reforms never go backward; and, in 1892, the people demanded and received local boards of health, with full powers and the payment of wages. The Laboratory of Hygiene came later,—began almost as a charitable institution,—soon destined to blossom out into its present full proportions of influence and blessing. Would the people of Vermont, to-day, allow the State Board, the Laboratory, the local board, the health officer, to pass to the realm of ethereal nothingness? Would they tamely return to the good, unsanitary times of the late '60's, because of the expense incurred now to save life? The reply will be given at the polls, September 4, 1906.

A glance at how best to cultivate a correct public opinion is essential. In sanitary propaganda, as in questions of government, "eternal vigilance is the price of safety." A wonderfully potent influence is the public press. This

Digitized by Google

medium of conserving public opinion was ably placed before this body last year by Col. Frank L. Greene of the *St. Albans Messenger.* The next agent of great availability is the family physician. The household reads the village and city paper at leisure; but the family doctor in time of trouble is an oracle of truth. His words sink into the deeper consciousness of the individual heart. The clergy come next, and the active man of business toward the last, but not least. The women of the state have a part as well; for, among them mostly are sown the seeds of an adverse public opinion, by such publications as *Medical Commonsense,* and their doctor and clergyman are about the only powers on earth or in heaven which can controvert the heresy of opposition to preventive medicine,—and these are not infallible agents, as some of us know to our sorrow.

This brings us to the consideration of a phase of public sentiment which would be ridiculous were it not of so serious a nature,—battling with death, and rank prejudice often giving the victory to the destroyer. An unreasonable public opinion is one of the greatest hindrances to the effective administration of the health office that can be encountered. Witness a few examples after nearly half a generation of personal service.

Two general epidemics of measles have swept over Vermont within the past five years. These have been held in check as much as possible; but one might about as well attempt to quarantine the air we breathe as to control the multitude of mothers intent upon their children contracting this disease and "having it over," as they say. The sentiment seems to be hereditary that children must of necessity suffer all "children's diseases," and the sooner the better. This is just as true of mumps, chicken-pox, and whooping cough as it is of measles.

Said a prominent citizen of Vermont recently to a health officer: "My children have all gotten over the measles, excepting the oldest daughter, who is away at school, and has not been exposed. Would you advise her coming home, or wait until the town is free from the disease?" The reply was, "Better keep her out of danger of the contagion." The first captain of Company A, 2d Vermont regiment of the Union army, overheard this, and he at once said: "If you had experienced what I did with measles in the army, you would advise every child to get the disease while they are young. We dreaded measles more in camp than the smallpox." That girl of sixteen died a little time afterward and measles was the predisposing cause of death.

A man of thirty this year became ill with typhoid fever in a certain town. Arrangements were made and the means provided to take him to a hospital, because of the frail health of his wife. His physician, the health officer, his employer, and others joined in these ideal plans for the care of a working-man. He refused to go. During the consultation a "mother of Israel"—hailing from a neighborhood locally known as "hell's kitchen"—ventured the belief that "typhoid fever was n't catchin'," probably giving the cue as to the motive for the patient's refusal.

Only last week, and in Bennington, too, in a case of threatened lockjaw from too much and too early Fourth of July, parents refused to allow the

Digitized by Google

use of tetanus "antitoxin," because of prejudice against the name "antitoxin."

What can be done with such people? I know what a well-known Vermont physician has remarked: "You cannot kill them, and there is no other way to rid the community of their pernicious influence. I don't know what you can do."

The deductions I make from a study of this subject are these:—

First. During the past twenty years in Vermont there has been fostered an optimistic public opinion, which commends and supports all that has been accomplished in preventive medicine and sanitation. This body of influence will not allow any backward movement, whether in the disguise of decreasing state expenses, or openly crippling the Laboratory and the Vermont boards of health; but

Second. It is useless to ignore a vigorous crusade against all these, and the principles for which we stand. This unreasoning public opinion is just as potent in its sphere of evil as the other is of good. There are intelligent people in our cities and towns who believe more people die from the effects of vaccination than from smallpox; who openly affirm they would rather risk the one than to endure what they call the dangers resulting from vaccination. These people have never heard of the results in Philadelphia, for example, of over 4,000 cases reported during four years prior to 1904, which openly refute the assertion, but they have read some "anti" publication, and, having read, believe the error. This logically leads to our

Third. The remedy. Every member of a board of health in Vermont, state and local, every health officer, every physician, should see to it that the correct version of prevention and cure goes into print. Its opposite is sure to be published abroad by the yellow journals, and the fraudulent (alleged) medical monthlies. Does any one who has made a close study of that stupendous delusion, borrowed from a cult of the second century A. D., and known in the twentieth century as Christian Science, suppose the later manifestation could have attained its present proportions had it been "shown up" ten years ago by the metropolitan press as a portion of the New York City dailies are doing to-day?

I refer tuberculosis to the symposium to-morrow.

"If these things are done in the green tree, what shall be done in the dry?"

Discussion by Dr. C. W. Peck, Brandon.

The beginning of the great scheme of sanitation and the prevention of disease in this country is of female origin. It first emanated from that source from which so many beautiful sentiments have arisen, the female heart.

The brave and sympathetic women of our Civil War, whose tender and loving natures went out to the brave men in the field during that trying period, builded better than they knew. With little or no idea of sanitary laws, they were determined to do something for suffering humanity in the camp and in the hospital and thus established the so-called sanitary commission, which has continued to live, although in a somewhat changed form;

Digitized by Google

but by scientific research it has grown to be the greatest power in the prevention of disease the world has ever known, and during the late war between Japan and Russia it demonstrated the great value of sanitation as a preventer of disease during an active campaign and also taught the world a scientific lesson not only as a preventive measure, but the value of law, order and preparation in military and civil life. The book entitled, "The Real Triumph of Japan" (during the war between Japan and Russia), by Dr. Seaman, is startling in its revelations on sanitary matters. This little book puts to shame all the other nations of the earth and clearly settles the fact that the battle which won was the battle with the silent foe for the preservation of the army through the prevention of disease through sanitary measures. During our own Civil War, the loss of men from disease was four times as many as those killed in battle. It is an established fact that for the last two hundred years and more, in all wars, four men have died from preventable diseases to one from bullets, whereas in the Japanese war with Russia more than four were killed to one dying from disease; and all this has come from sanitary and preventive measures against disease. Most startling of all is the crowning piece of imbecility in our late war with Spain, in which fourteen were needlessly sacrificed to ignorance and incompetency for every one who died on the firing line or from battle casualities, and this campaign lasted only about six weeks. Can any of us say just what part the canned meats of Chicago took in this great sacrifice? So to little heathen Japan we must give the credit of changing the figures of four deaths from disease to one from bullets to over four deaths from bullets to one from disease, and this is all due to carefully prepared sanitary and preventive measures. No politics, no graft, no favoritism, but pure, honest, patriotic, intelligent scientific investigation and application on the field and in the hospital with rigid discipline has demonstrated to the whole civilized world the power of preventive medicine.

In this a great lesson has been taught us, which I hope, as it becomes known to the American people, will mean something more than a fairy tale. A lesson which should strike deep into the minds of our thinking people and serve as a stimulus to a higher order of thought and action, which is so necessary to complete the coming American citizen if he is to stand for all his country demands of him to-day. If this great achievement could be wrought by Japan during a military campaign, why can it not be done in civilized and Christianized America? Why should we, the leading nation of the world in intelligence and ability, be so far behind in our sanitary arrangements and in those preventive life-saving measures? Why the best blood of our land should have gone down to a premature and ignoble grave during the Spanish-American War at the rate of fifty-six deaths from preventable diseases to four killed in battle when Japan lost only one from disease to four killed in battle is a question which ought to appeal to the American people. As a nation we must stand convicted in the eyes of the world of our ignorance or indifference. Where is our boasted American citizenship, our religious love for humanity which we offer so gratuitously and so

Digitized by Google

sanctimoniously to the Oriental nation? Would it not have been well for us to have considered our own shortcomings and have saved some of our own souls from those needless poisons and death at Chickamauga, rather than worry ourselves about the people of Japan and their eternal salvation? Take for example the cases of typhoid fever and typhoid dysentery which played such havoc with our men at Chickamauga, diseases which are perfectly preventable. What can we say in defense of our course? A national disgrace to our medical and surgical staff during that campaign which will follow us down in history, a blot upon the ability of our medical profession which can only be explained on the ground of corrupt politics and favoritism.

Take another example, tuberculosis. Can any reasonable man doubt for a moment the value of prevention and sanitary measures in the treatment of this disease as against all others? And what is true of this is true of all our contagious diseases. Ten years of rigid measures in this state against the spread of this dreadful scourge among the higher and lower orders of animals and it would be reduced to a minimum, but the good people of our state do not see it that way. Much as we need a sanatorium for the treatment of incipient cases of consumption, and much as we appreciate the great gift of our greatest benefactor, Senator Proctor, in his great charity to our state, we also need a sanatorium for advanced cases whereby the community could be protected. In the treatment of an incipient case you save the one individual diseased; in the care and preventive treatment of the advanced cases you save the whole community from exposure which means many more cases, but the state is contemplating, the state is making tuberculosis commissions and the people are dying from a preventable disease, as our boys did at Chickamauga. The state is too poor, she thinks; not so wise as the grand Senator who has learned that now is the only time we can command, and he acts while he lives. He who hesitates is lost, it is said. Certainly the state has lost three precious years in contemplating a proposition so plain that he who runs might read.

But we are a government of the people, consequently it is through the people we must seek results, but the process of educating the people to a new idea is slow; but slow as the people are to move, they do move and almost always in the right direction. Great advancement for the better has come to us through our sanitary and preventive law measures. We have had three outbreaks of scarlet fever in the town of Brandon in the last fifteen years, and these were all arrested on the spot. Had the preventive measures been as rigidly enforced in other towns as they are in ours we should not have had a case. What is true of scarlet fever is true of whooping cough, measles, smallpox, and diphtheria, and all the other germ diseases.

When the people are educated to fear tuberculosis, as they are smallpox and diphtheria, then it will be no more common. What could we have done in the past had it not been for the preventive measure of vaccination in smallpox? And what could we do to-day without the preventive and curative power of antitoxin in diphtheria?

Without our knowledge of these great and useful preventive measures

Digitized by Google

we should be in constant danger of having our large and populous centers depopulated by an epidemic of either of these dreadful diseases, as has happened many times in the past. Fortunately we are conquering the silent foe, the noiseless destroyer of the people, and I here reiterate what I have stated heretofore, that all germ diseases can by the power of mankind be swept from the face of the earth. As soon as the intelligence of man is capable of grasping, knowing and obeying nature's laws, just so soon he will be capable of self-preservation against germ diseases, and death from old age, which is ordained by God Almighty, will be the only conquering hero in the great struggle for human life on this earth.

Dr. W. N. Bryant, Ludlow.

There are just two or three things I want to say with regard to this matter under discussion. The influence of the surroundings is too great to resist the temptation. It is easy to say good things if you keep talking long enough, but Mr. Stillson has compressed more good things in a short paper than is usually the case.

The paper was well worth listening to; what is true of Mr. Stillson's paper is also true of Dr. Peck's.

With regard to preventive medicine, it is the thing we have to consider in these days. We have learned slowly but surely that that is the only way that we can suppress certain ills and evils. This matter of tuberculosis, for instance. It does not matter so much whether we can cure cases of tuberculosis or not. If we can prevent cases of tuberculosis, we do not need to cure them. So it is with all infectious diseases; if we can prevent them, it is better than curing them.

In a neighboring town among a family of several children one was sick. The attending physician was an irregular man, mixing theology with his medicine. The child died; then they discovered it had had diphtheria. The health officer went down and quarantined the family and urged the physician to give antitoxin to the other children for immunizing purposes, but he did not believe in antitoxin. Three others developed diphtheria; one died before I left, and the death of the others was hourly expected. That man was certainly morally responsible for those deaths.

Some one referred to the remuneration of a health officer. This is a thing we ought to bear in mind. The people appreciate things they pay for, and they slight things which do not cost them anything. I say to you gentlemen here as health officers, present and collect your bills when you return home, and the different localities will not only learn to appreciate your work, but will be willing to pay the bills. Towns ought to understand that the services that they are receiving from the health officers are of value, and they will not realize it until they are asked to pay for it. Last spring we had a little unpleasantness in our town. The health officer's bill was rather large because we had had an epidemic of infectious diseases. The auditor refused to audit the bill. He thought $1 too much for tacking up a quarantine notice. I informed him that it was immaterial whether or not he

Digitized by Google

audited the account, as the health officer is a state and not a town officer. The bill was paid. Before this time we had not quarantined mumps and whooping cough as the law directs, but I said hereafter we will do our duty and quarantine these cases.

The moral to be drawn from this is that if a sense of duty will not impel a man to do such duty, possibly if he gets mad enough he will do it.

Dr. E. E. Whitaker, Newport.

I don't know whether I caught the fever or what, but I presume some germ floating around here has attacked me. There are very few people who can present a subject of this kind so that it will be of any benefit to the laymen. What we lack is men who can get up and give a talk on a scientific subject which will interest the laymen.

We were fortunate in our town this last winter in having a portion of the tuberculosis commission present. I have heard Dr. Bryant speak on this subject of tuberculosis and I did my best to have him present in our town, but he was booked for the other side and could not come.

A health officer in many instances who will do his duty thoroughly will incur the enmity of a large proportion of his community. I believe that from time to time, talks upon these subjects of sanitation by competent men would do more good than all the papers you may write and publish and scatter throughout the state. Get some good speaker, some one who can present the subject intelligently, not scientifically, to an audience, and you will reap better results than you can possibly expect to reap in any other way.

Dr. E. R. Campbell, Bellows Falls.

When Mr. Stillson closes this discussion, I wish he would touch on the method of combating diphtheria by the use of free antitoxin furnished by the town. I certainly believe that Bennington has the best system with regard to this matter, and I should like very much to have him tell us about it when he closes his discussion.

H. L. Stillson.

I jotted down three or four topics which I thought possibly, if we did not stay too long, I would like to say a word upon. You may get the impression that I am a pessimist, but I am not. I am an optimist.

That little joke of the Legislature of 1904, which states that state institutions shall not expend more than one twelfth per month of the annual appropriation, has been harmful to the Vermont Laboratory. They heretofore bought their expensive chemicals in sufficient quantities for the year, thereby saving the difference between retail and wholesale prices. Now it is impossible for them to buy in such a quantity because their monthly allowance will not permit them to spend such a sum as a quantity sufficient to last them a year would cost. They are obliged to buy them by the pound.

Digitized by Google

Sometimes the loss is more than 50 per cent. I would like to say just a word here regarding the work done at the Laboratory. When the founder of the Laboratory first established it, he (Dr. Linsley) worked for charity's sake. He gave up two years of his life; and he gave up, also, his very valuable apparatus. He gave the state, you and me, the use of his brains and experience in this particular line of work, and he gave us the use of his instruments. He bought his chemicals in sufficient quantities to save the discounts,—and so did the State Board of Health at first when it took charge of the Laboratory,—but now things are different. You know that chemicals are expensive, and it is ridiculous to put the Laboratory on the limit of using only one twelfth per month of its appropriation. There is not another state in the Union which has such a law.

With regard to the use of antitoxin; in 1897 it was decided to have free antitoxin in the town of Bennington. The rule that year was that any one who was able to pay for this specific would be sent a bill; and those who were unable to pay for it received the benefits of the specific just the same. The auditor of the town would audit the bill and the town would pay for it. The only person in the town of Bennington that year who paid a bill for antitoxin was the chairman of the board of listers. There was only one dosage. Judge Darling said he would draw an article in the warning so the town would pay for it. He drew the act. I went to see the heavy taxpayers and talked the matter over with them. Since then everybody, rich or poor, if he needs antitoxin, gets it and the town pays the bill. We held the town meeting. One of my friends got the floor and began to fire questions at me. We had 130 or 140 cases of diphtheria that year, and had used a lot of antitoxin, which cost considerably more than now. I answered the questions and when the moderator put the vote the town unanimously adopted the article. There was only one man who said no, and that was on general negative principles, his vote following the declaration. From that time to this everybody has had antitoxin when he needed it.

I was called up about one o'clock the other morning, and the report said there was a case of suspicious diphtheria; the physician took a culture and gave 4,000 units of antitoxin. I keep a record of where I give this specific. My book says: "Diphtheria in such a family"; "Number of units used"; "Number of children in family." I think, where it is possible, the quarantine card should be put up by the family physician. When I have been notified that some one has resisted quarantine, I then attend to placarding houses myself, putting on a police guard if necessary. Our antitoxin bills run from $300 to $1,500, and have never been disputed. You will need to watch antitoxin. Never use any that is cloudy. We frequently inspect ours, and perhaps that is the reason we have never had any trouble. We always immunize exposures. If diphtheria is in a household, we go right through the entire family and give antitoxin as though it was a Dover's powder.

Now, with regard to tetanus antitoxin. Our law does not say diphtheria antitoxin, so we bring in the tetanus patients and treat them with tetanus antitoxin immunizing dose as a prevention and the town has paid for it.

Digitized by Google

With regard to the teachers, I want to say a word. In Bennington we are all connected by telephone. Our schools have telephone connections, our stores, our homes, and business houses, and, in fact, we do all our business by telephone. We have our schools well ventilated. We use the fan method. We regulate the temperature of a room. We have teachers in our schools, however, who cannot be made to understand that they are not to open the windows. I do not suppose our teachers are lacking in intelligence any more than other teachers, but we have told them repeatedly that they must not open the windows, but use the regulators,—still they do not seem to know what that means. I would ask the State Board when they issue instructions regarding the care of schoolhouses to put in something about how the teachers may regulate the temperature of their respective rooms.

For several years, whenever a case of typhoid fever has occurred in our town, attention has been paid to prevention. The dishes from which the patient is to eat are selected; nobody else uses them. We take care of the excreta by burning. This is the method: A flour barrel is prepared by boring the bottom full of holes, covered, and set half way into the ground, so that a free current of air surrounds it. Everything from the sick room is emptied into this barrel with layers of sawdust. When it becomes half full, saturate with kerosene oil and set fire to it. I use just as much formaldehyde, 40 per cent solution, when I deal with a case of typhoid fever as I do with a case of scarlet fever. There is no necessity of spreading the disease from one member of the family to another, unless they are already infected.

With regard to chicken-pox. Several children from New York came to Bennington and the first thing we knew one of them was down with chicken-pox. They spend their summers in Bennington and generally stay until Christmas. I said: "This town is full of summer boarders; stay in and keep *close* quarantine." That is all there was to that. They obeyed and made us no further trouble. I suppose if I said, "I shall have to tack up a notice," they would kick. But I went at them in a mild way and said, "You must keep close quarantine, else I shall have to tack up a placard." They quarantined themselves and were glad of the chance to do it.

As I close I wish to say that I feel that our work is becoming appreciated. With all the liberality of the town and selectmen, the work must necessarily be underpaid. We health officers must make up our minds to do a thousand dollars' worth of work for one hundred dollars every year that we serve. My family have often said to me: "You cannot afford to do so much for so little compensation. You must stop it." If a man can afford to contribute toward such work, all right, but if he cannot, then he should step out and let some one who is willing and able to devote his time to such philanthropy take the office, for this work has got to be done, notwithstanding the economies of the Legislature first, and the town's administrations.

Digitized by Google

Dr. E. S. Allbee, Bellows Falls.

Do you always charge for posting notices, whether you do it yourself or not?

H. L. Stillson.

If I do not do it personally, the family physician does, and I always look after the physician. I always ask the physician, "Are you going to get your pay for it?" If he says, "No," I always put in a bill for him.

We have a resolution spread upon the records in the town clerk's office which is signed by the selectmen. We elect a president, vice president and secretary, and we resolve that all expenses incurred by the sick shall be paid by the town, where the patient is unable to meet the expense.

Dr. W. L. Havens, Chester.

Is it usual to elect a vice president?

H. L. Stillson.

I don't know, but we always do it.

Dr. C. M. Ferrin, Essex Junction.

I would like to ask regarding the disinfecting after contagious diseases. Who does it and who pays for it?

H. L. Stillson.

The town pays for it. I don't know whether that is universal or not, but I know the town pays for it down home. We have used formaldehyde solution for a number of years. I went to death's door by using formaldehyde gas. I noticed that it affected me sometimes, but never thought seriously of it until this year. I was disinfecting a house along the first of May; I became prostrated, and the physician said my pulse was fifty and my heart was weak. He prescribed a complete rest for me and entire cessation from duty, but I continued at my work and got along pretty well. Now, if you have a door that will not shut, leave it; by no means stay, trying to fix it, for it means a shock to your system which I hope none of you will ever experience. I was disinfecting another house, and when I was about to get out, the woman said, "Here is a door that I cannot shut." I said, "Never mind that, I will take care of it." I stayed there until I was overcome. The doctor came and prescribed a rest of three months for me. I said, "No." I discovered that my mouth and hands were all seamed. The next day the doctor said, "You have got to go to Atlantic City for a rest." Instead, I got out the books to see what formaldehyde poisoning was. I found what I wanted and sent for the doctor again. I said, "We must have a demonstration here." I took permanganate and poured it from one vessel into another; the doctor stayed right beside me. I took a teakettle

Digitized by Google

of hot water and put it on the permanganate. You will inhale more or less of it. The doctor said, "I believe you are right in your diagnosis." I am not in my full health to-day, but I am a great deal better. I made a vow then and there that I would just give a warning to my brothers, so that you will never be caught in this strange way.

Dr. C. M. Ferrin.

When I use gas from a generator I notice a great many flies still live. I want to ask if you have had any experience in that matter. Does formaldehyde gas kill flies?

H. L. Stillson.

Not until I used potassium permanganate.

Dr. C. M. Ferrin.

Will that kill flies and germs?

Dr. C. S. Caverly.

Yes, it will kill the germs.

H. L. Stillson.

I take a pail and a pan and set them in the room. I measure the room. For an ordinary room I take a pound of the solution, which is practically a pint to a pound of formalin. The required quantity of permanganate for each pint of formaldehyde solution is six and one half ounces. The permanganate is first put into the pail and the formaldehyde solution is then poured upon it.

Dr. C. W. Peck, Brandon.

I take a galvanized pail and then a protecting pail or pan, and put into the pail sixteen ounces of formaldehyde and seven and a half ounces of permanganate. If you want to give a good thorough dose, double it. Cork up the windows and get ready for business. You set this pail and pan on a gridiron and close the door and get out.

Digitized by Google

ADVISABILITY OF NOTIFICATION IN TONSILITIS, PNEUMONIA, AND CEREBRO-SPINAL MENINGITIS.

By R. H. Miner, M. D., Rutland, Vt.

It would seem that sufficient emphasis had already been laid upon the necessity of proper sanitary precautions in regard to two of the diseases mentioned, viz., pneumonia and cerebro-spinal meningitis, but unfortunately there seems to be an attitude of stoical indifference maintained on the part of the medical profession, especially in certain localities, towards the requirements for notification of these maladies. At a conference of state and provincial boards of health of North America, held in the city of New Haven in October, 1902, it was agreed that pneumonia and cerebro-spinal meningitis be added to the list of communicable diseases dangerous to the public health. And this recommendation has since been legally indorsed by nearly every state where matters of public health are seriously considered. But one case of pneumonia has been reported to the department of health of the city of Rutland since April 1, although several deaths have occurred from this disease since that time. This seems to show either ignorance on the part of the medical profession in regard to the requirements in the case or a total disregard of them. For this reason, it seems desirable to rehearse in part what has already been said by men eminent in our profession applicable to the case in hand.

As regards tonsilitis, while it is not at present regarded as a disease proper for notification, there seem to be some good reasons why it should be added to the list.

It is universally agreed that the pneumococcus is the essential factor in the production of croupous pneumonia; that it is more or less constant in the throats of healthy individuals, and if exposed to air and sunlight is rapidly destroyed. William A. Park and A. W. Williams, members of the committee appointed by the New York department of health to investigate the acute respiratory diseases, report a comparison between the pneumococci found in the throat secretion of healthy persons living in both city and country, and those obtained from pneumonic exudates and diseased mucous membranes; that the virulence of pneumococci may be rapidly increased for a susceptible species of experimental animal by successive passage, and since the pneumococci obtained from most pneumonias are more virulent for experimental animals than are those obtained from healthy individuals, therefore the virulence of pneumococci from cases of human infection is probably increased for human beings, hence cases of pneumonia should be considered to a certain degree contagious, and since the virulence of the pneumococci may be quickly increased, and since the organism is very prevalent in normal sputum, all possible measures should be taken to restrict public expectoration.

Digitized by Google

Also in the same report Katherine R. Collins states: "From a study of patients in the hospital wards, certain conclusions in regard to communicability were drawn. Normal individuals, in whose mouths the pneumococcus is repeatedly found to be present, may acquire the organism by association with pneumonia cases. The handkerchiefs and dishes of pneumonia cases are to be regarded as a means of transference of the organism from person to person. The lips of drinking cups and the sputum or saliva in sputum cups were found to contain living and virulent pneumococci."

F. C. Wood in a recent publication says: "The life of the pneumococcus in moist sputum is of considerable duration, the average period being less than two weeks, unless the material is exposed under direct sunlight. But as such sputum does not give off bacteria, even when exposed to strong currents of air, it may be considered as innoxious, except to persons handling clothes, bedding, etc., which have recently been contaminated. Under ordinary conditions, however, this sputum dries in the course of a few hours or days. The dried masses retain their virulence for a long time, and if deposited on the floor or on the bedding of the patient may be powdered mechanically, and sweeping, dusting, or brushing the contaminated articles will distribute pneumococci in the air. Fortunately, however, the organisms in the sputum do not remain long in suspension, and dry off rapidly under the action of light and dessication. In sunlight or diffuse daylight, bacteria in such powder die within an hour, and in four hours, if kept in the dark."

The danger of infection from powdered sputum may, therefore, be avoided by ample illumination and ventilation of the sick room, in order to dilute the bacteria and by the avoidance of dry dusting or sweeping.

When a person suffering from pneumonia coughs, sneezes or expectorates, particles of sputum or saliva are expelled from the mouth which may contain virulent pneumococci. They may be inhaled by persons in the vicinity of the patient, or deposited upon various articles in the room.

It seems, therefore, that the risk of infection from the pneumococcus is largely confined to those in direct contact with the person whose excreta contain the organisms.

In regard to cerebro-spinal meningitis, Councilman maintains that the meningococcus is of very feeble vitality, and incapable of existence outside the body for any considerable period of time, while on the other hand Jager has found the organism active after drying for a period of 127 days.

Various opinions have been held in regard to the communicability of the disease. Eichhorst says: "In the distribution of epidemic cerebro-spinal meningitis, personal intercourse plays an important role, which fact has been very easily confirmed, for, especially in garrisons, epidemics have been known to arise several times if a patient affected with meningitis entered the place. Very reliable observations regarding the transmission of the disease have been reported by Peterson, from an epidemic in Berlin, in which it was shown that not only intercourse with the sick, but entrance into infected rooms, was capable of transmitting contagion, and that contagion occurs

Digitized by Google

even by means of a third person. The health department of New York City requires that this disease be placarded, quarantined and fumigated as in other major infections."

Tonsilitis is a disease unquestionably of a contagious nature, as many of us have had ample opportunity to observe, and while it is rarely fatal, aside from its complications, it is often the cause of much discomfort and expense, and again there is the possibility of a mistake in diagnosis between it and that much graver malady, diphtheria.

Only recently I was privileged to observe a case of unmistakable diphtheria which had been considered as tonsilitis up to the fifth day of the disease, although under the observation of a physician during that time. In the meantime, many people from neighboring houses had been exposed to infection. Inasmuch as only by proper notification of a contagious disease, can it in any measure be controlled, the following recommendations suggest themselves for our consideration:—

That we labor to secure the observance of existing regulations in regard to pneumonia and cerebro-spinal meningitis, with special emphasis upon the necessity for isolation of the patient from other members of the family and thorough disinfection of dishes and other articles leaving the sick room. Disinfection of the upper air passages by means of antiseptic gargles and nasal douches should be strongly recommended for those coming in contact with the patient.

As there are many people very susceptible to the contagion of tonsilitis, a placard posted upon the house would work harm to no one and serve as an effective warning to the general public, while if subsequent developments showed the case to be one of diphtheria, the danger of spread of the disease would have been reduced to a minimum.

Discussion by Dr. C. S. Caverly, Rutland.

The statutes give the State Board of Health a certain amount of authority, and one of the chief features of this authority is that to make rules and regulations respecting contagious diseases and the causes that lead up to them.

The State Board of Health, under this act, has undertaken to define diseases that shall be reported as contagious, infectious and dangerous to the public health. We have followed, in making up that list of diseases, I think, exactly the list recommended by the Conference of State and Provincial Boards of Health of North America, to which Dr. Miner has alluded. That conference undertook to define what "communicable and dangerous to the public health" meant as those words are found in almost all the statutes in this country. They have made out a list of diseases which you will find in our rules and regulations and which includes two of the diseases which are the title of this paper,—pneumonia and cerebro-spinal meningitis,—but it does not include tonsilitis. I think you will appreciate the embarrassment of health authorities in trying to find the diseases which should be reported

Digitized by Google

under those powers. It is necessary to report such diseases as are really communicable and dangerous to the public health as far as practicable and not go a little too far. There is no question but that tonsilitis is an infectious disease. There is no question but that it is frequently, and perhaps always, contagious. Possibly it may be carried by a third person, carried on clothing, on furniture, etc. The other side of the question, the one presented by Dr. Noble, is, Is it practicable to report or apply preventive measures to that disease? The health authorities of this country have thought it is better to go slowly in extending this list of diseases, which is already a very long one. Tonsilitis is an infections and contagious disease, but not very serious as far as affecting the health. It sometimes does lead up to serious complications. There is this danger, that it will be mistaken for true diphtheria. Now, the differentiation between tonsilitis and diphtheria can seldom be made surely except by bacterial examination. We all of us see the very harmless sore throat which proves to be Klebs Loeffler's bacillus infection, and on the other hand we frequently see sore throats where there is a very genuine membrane which proves to be streptococcus or some coccus infection. We have in Vermont a Laboratory just for such purposes. That is one of the most important functions of a physician, to determine to a certainty the differentiation between these two diseases. I think a report of tonsilitis should be made to the health officer. I am not of the opinion, though, that those cases should be quarantined or should be placarded, but I think a report would be a very good thing, and literature, perhaps, put in the hands of the family or physician, instructing them about the danger of its being mistaken for a more serious disease. I don't think it is practicable to go any farther than to have a culture taken and examined at the Laboratory. That settles the question of doubt, but I want to say emphatically that every suspicious case should be cultured, and then you are risking nothing.

As regards pneumonia, it is the most fatal disease we have here in Vermont. It is one of the most fatal in North America. In Vermont the death rate has been higher than from tuberculosis for the last few years, and one reason for this is that the disease is not reported. It is not recommended to be placarded or quarantined, but it would be safer if it were done.

Cerebro-spinal meningitis is certainly placed in this list. It is a terrible disease from every standpoint. It is the most fatal of any of the infectious diseases. Even when death does not occur, the sequelæ are always to be dreaded. We here in Vermont have been rather susceptible for one hundred years or more to this disease. The most serious outbreak in this state of cerebro-spinal meningitis, causing some six or seven thousand deaths, occurred in the early part of the last century. Whenever there has been an epidemic of cerebro-spinal meningitis we have felt it here in Vermont. But according to our population, we have more cases than the larger cities do. In 1904-05 there was a wave of cerebro-spinal meningitis in the East, and I think we had fifty-seven cases here in Vermont and of course almost

Digitized by Google

all were fatal. That is a very large number in proportion to our population. I think they had 1,000 in New York.

Councilman and others have thrown a good deal of light on the bacteriology of this disease. The meningococcus itself is a very important factor, but there are other forms of cocci that have been found, especially the pneumococcus. All of these forms have been found in epidemics in the discharges from the nose. There is, therefore, a very good reason for practicing some disinfection of the upper air passages. It belongs to the list of diseases which are to be quarantined. It should be the *full* quarantine. In case of death, there should be no public funeral and a very careful disinfection of the premises, particularly of the room occupied by the patient.

We would be very glad to have any further remarks on this subject.

Dr. G. G. Hall, South Woodbury.

The question of tonsilitis, perhaps, could be disposed of by having the members of families, in case no physician was employed, report to the health officer, and he could determine whether the case was one of tonsilitis or diphtheria. That would obviate any quarantining in case of simple tonsilitis and would be a certain way of excluding all cases of diphtheria.

Dr. D. C. Noble, Middlebury.

No doubt every physician occasionally has a patient with a sore throat when it is difficult, if not impossible, to determine whether it is a case of tonsilitis or real diphtheria.

All such *doubtful* cases should be strictly quarantined until it is positively known that the case is not one of diphtheria; that is, quarantined as a *suspected* case of diphtheria.

Tonsilitis, in its various forms, is such a very common disease, especially during the spring months, so often accompanying colds; of short duration and not as a rule serious, it seems to me if the family physician instructs the other members of the household that it is best for them to remain apart from the patient, excepting so far as it is necessary to give the patient proper care, that this is about all that can be accomplished in this particular disease; that is, by appealing to the people to use common sense regarding the precautions taken. I believe more will be accomplished than by possibly antagonizing them by posting their houses and subjecting them to inconvenience and perhaps financial loss.

By the latter method we run the risk of arousing public sentiment against quarantine regulations in general, and so making it more difficult to enforce quarantine in more dangerous diseases. In other words, if quarantine is made too common, the physicians will neither report all their cases nor will the general public cheerfully respect the orders of the health officers.

Theoretically it might be advisable to quarantine tonsilitis, but it seems to me that the public is undergoing about all the quarantining it will stand at present, and possibly we might accomplish more by systematically educating the people along other lines regarding the nature of the disease. In order

Digitized by Google

to bring about the best results in controlling this disease, which the laity does not consider especially serious, I believe more will be gained by obtaining the cheerful coöperation of the public than by resorting to legal measures. If public opinion should be aroused against these perhaps unnecessary precautions, it might lead to legislation which would be unfavorable towards the continuance of the grand work already being done along the line of restricting the spread of disease.

As to lobar pneumonia, without doubt it should remain upon the list of reportable diseases, and physicians should be required to *respect* this demand.

However, the final decision regarding these questions is properly in the hands of the State Board of Health, and Vermont is fortunate in having men on the Board who are thoroughly competent to determine what measures are adapted to bring about the best results.

As to epidemic cerebro-spinal meningitis, we are all aware of the difference of opinion existing among equally eminent physicians regarding its communicability. To illustrate this allow me to quote from the paper read by Dr. Daniel Lewis at our annual meeting last year. Dr. Lewis said, "Epidemic cerebro-spinal meningitis is not a contagious disease, and it is the duty of every physician so to teach the people in his locality." However, in the same paper he admits he advises his health officers to maintain more or less of a quarantine.

Professor Councilman is reported as saying, "It is not actively contagious, or, if contagious, it is only midly so."

The editor of the *Lancet Clinic,* in speaking of this disease, says, "That it is contagious to some degree, however, can be no longer doubted, and it is better to so regard it, for it is only by the prompt and efficient sanitary measures that contagious diseases call forth that we can hope to stamp out this dangerous disease."

Dr. A. O. J. Kelly of Philadelphia says, "I believe it is advisable to isolate all cases of epidemic cerebro-spinal meningitis, not always because the disease is especially contagious in the ordinary sense of the word, but because it is contagious to some extent, and because we do not know the means of dissemination of the contagium."

Dr. A. C. Abbott says, "I have my doubts about its transmissibility, but until we have more knowledge of it I think it wise to safeguard the public by taking such sensible measures as isolation, disinfection and notification of the existence and location of the disease." The above opinions regarding this disease were expressed only a year ago. Therefore, in view of the limited knowledge of the disease, the high death rate, and appalling effects seen among those who are fortunate, or rather unfortunate, enough to survive, I most heartily approve of notification, quarantine, and disinfection in all cases of this most alarming disease.

I would like further to explain my reasons for opposing certain parts of Dr. Miner's paper. It seems to me that we are very fortunate in having public sentiment backing up the Health Board in attempting to control

Digitized by Google

communicable diseases. The public knows, as a rule, the object of posting houses and of those precautions which seem reasonable to prevent the spread of this disease. It would seem very unfortunate to add to this list to the extent of antagonizing those people, for we should have the public with us. If we put tonsilitis on the list of diseases to be reported it would mean the addition of hundreds and thousands of cases in the state; perhaps seventy-five to a hundred each year in a town of two or three thousand people. If these houses were posted it would mean quite an expense in each town. For instance, if there were a hundred cases this would mean $100 or more, and some town officials might object to paying these large amounts. I think that literature of the proper kind should be placed in the hands of the family. Perhaps a good way would be for the State Board of Health to issue little pamphlets describing the disease, so that it might be understood by every one, and send them to every family in the state. It would be much less expensive than posting the houses, and then we would be sure that all would have the right idea of this disease. People in general are better enlightened in regard to it than they were five years ago. The proper method is to educate the people, and if they believe it to be a communicable disease, they will assist us by using common sense, and I think in that way we will at present accomplish more than by adding tonsilitis to the list of diseases to be quarantined.

Dr. C. P. Newton, Underhill Center.

Dr. Lewis said last year that he had twenty-three cases of cerebro-spinal meningitis from twenty-three different families, and that there were no other cases in these twenty-three families. That would lead me to think that it was not contagious. I had two cases in families where there were no other cases, and I cannot believe it is contagious.

H. L. Stillson.

I rise to say that there is one town in this state that reports cases of tonsilitis. The disease is treated in this manner. If it is a case which looks at all suspicious of diphtheria, or the physician is in doubt about its being tonsilitis, a dose of antitoxin is administered and a culture is sent to the Laboratory. A good many reports come back negative. But antitoxin works like magic with tonsilitis as in diphtheria. We give 3,000 units as a minimum dose. We have always found that antitoxin is cheaper than sickness. We must recognize the difference between "contagious" and "infectious." The younger physicians don't use those two words as older men do. Everything is being changed, and if five years make a difference in literature, it transposes or has transposed the meaning of these words. In reporting a death, the chief cause of the death may be given "exhaustion," for example. Now, that would not be passed some years ago; the contributing cause was stated as cancer of the uterus, which remedied the defect. If I understand the new terminology, a contagious disease is one acquired *contact*—actual contact.. An infectious disease may be contagious or in-

Digitized by Google

fectious or both, and there is a positive modern distinction. I believe thoroughly with Dr. Noble. It has been a cause of endless perplexity, this multiplication of placards. We have always had the "silent" quarantine in typhoid fever and we find it fully as protective as the placarding of a house. It is just as efficient. We have practiced that quarantine for fourteen years and must confess we are perfectly satisfied with it.

Dr. W. L. Havens.

Do I understand where you give antitoxin and get a report from the Laboratory that the case is negative you get good results?

H. L. Stillson.

Certainly, it acts as a charm.

Dr. E. S. Allbee, Bellows Falls.

I want to thoroughly endorse Dr. Noble's idea of posting tonsilitis. I don't believe the laity are educated up to it. We already have a long list of quarantinable diseases and I don't believe the physician is educated up to reporting them in our town yet. With the reporting of tonsilitis, I don't quite see the benefit to be derived. I don't think there would be fewer cases of tonsilitis, but probably more would be called simple sore throat. I certainly would not be in favor of reporting tonsilitis. My experience is that they are not reporting pneumonia as yet. I think there is one physician in my town who has taken the pains to report his cases of pneumonia. The physicians down our way, if there is the least doubt about its being a case of tonsilitis or true diphtheria, give antitoxin and send a culture to the Laboratory and wait for the report.

Dr. C. H. Beecher, Burlington.

If you are asked to quarantine tonsilitis, why should you not be asked to quarantine the other diseases, laryngitis, bronchitis and pharyngitis, as you almost always get the same etiological factors manifested?

Dr. H. A. Buck, Burlington.

Fifty years ago I was practicing in Illinois, and I had tonsilitis; there was no quarantine imposed then. I was taken sick and I doctored myself. I lanced my tonsil and I have lived to be almost eighty-two years old. This quarantining of every little case of sore throat is not called for at all. I think you are carrying it a little too far, unless the disease has changed a great deal within the last fifty years, and I think what was tonsilitis then is tonsilitis now.

Dr. E. E. Whitaker, Newport.

I am very glad to be here and to see, and to hear the voice of one who has proved that Osler's statement regarding the age at which men should give up and die is not correct.

Digitized by Google

I wish to say that I strongly oppose the placarding of simple cases of tonsilitis. With regard to meningitis, while we all understand the fact that it is a fatal disease, we must admit the fact that there is a question as to its contagiousness, and while we don't know certainly I see no demand for quarantining those cases.

George Smith, Manchester.

In regard to meningitis. Before much was thought of that disease I had a case reported to me in which the child died and was buried. The parties moved out of the house, and that house was vacant for two years. Another family moved in from a distant city, and in about two months one of their children took the same disease and died. Whether there is anything of an infectious or contagious nature in this disease I am unable to say, but here was two years' time that the house was vacant, and I have no reason to believe that the child had contracted the disease before the family moved in, for the symptoms had not developed until they had resided in that house four months.

With regard to tonsilitis. I am glad I live in a town where the doctors are always right in their diagnosis before they report a case, and if they have a case of sore throat, they always ask for a limited quarantine, and send in cultures for examination. I had one case reported to me and I quarantined it immediately and also had another physician in to see if it was thought to be diphtheria or not. Doctors don't always agree, and they did not agree in this case. One of them said it was not diphtheria. I stuck to the old plan that when a house was quarantined keep it quarantined until the danger is over. We never quarantine unless it is absolutely necessary. I am greatly in favor of Mr. Stillson's method of quarantine. I think the placard is a menace to any family. Our method is to put on a card, showing what we suppose is the disease, if we are sure of it; but unless we are sure of it, we put on a modified notice. In the majority of cases I have had reported to me they have been nothing more or less than a common sore throat. Now, a full quarantine on those houses would be an outrage. I believe we should go slow and we will be sure to reap better results.

Dr. W. L. Havens.

I want to say a word with regard to notifying the people. In my town there are two books in every house; a Bible and a town report. If each health officer will get the selectmen to give him three or four pages in the town report, the health officer can state just what diseases should be reported and what new laws have been enacted and just what is expected of them.

Dr. R. H. Miner.

I am glad that this paper has been so fully discussed. All who have expressed themselves have given evidence of the fact that they believed tonsilitis to be contagious. Dr. Noble said in a little town it would increase the expense to the amount of seventy-five dollars. That shows that tonsilitis

Digitized by Google

is prevalent and infectious. The question is, Is it worth while to do anything about it? Dr. Caverly said it was necessary to quarantine cerebro-spinal meningitis and pneumonia. Neither one of those diseases is as infectious as tonsilitis. But the reason for quarantining them is because they are so fatal. Aside from death, there is a great deal of suffering and loss of time which is an expence to the state connected with sickness from tonsilitis. If we are going to prevent any disease which is infectious, we have got to do something with those who already have it. Every person in Burlington or Rutland has an ice card in his window, and nothing is thought of it; so a card for modified quarantine, is no worse. I have had four or five cases of tonsilitis in the same family a number of times. If physicians, as they have expressed themselves, do not believe it is of any importance or infectious enough to receive our consideration, what would be the advantage of sending out pamphlets, as has been suggested? The danger is of confounding it with diphtheria. Where does the hundred dollars come from that pays the health officer? The people pay it. Are the people less willing to pay one hundred dollars for the health officer, or are they more willing to pay a thousand for sickness?

Digitized by Google

BULLETIN OF THE

VERMONT STATE BOARD OF HEALTH.

Volume VII. No. 1.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

LIST OF TOWNS

not represented in the School of Instruction for Health Officers by reason of their health officer failing to attend as provided by law:—

Addison County.—Cornwall, Goshen, Granville, Hancock, Leicester, Panton, Whiting.

Bennington County.—Landgrove, Peru, Pownal, Readsboro, Sandgate, Searsburg, Shaftsbury, Stamford,* Winhall, Woodford.

Caledonia County.—Kirby, Ryegate, Waterford, Wheelock.

Chittenden County.—Huntington.

Essex County.—Bloomfield, Brunswick, Canaan, East Haven, Granby, Guildhall, Lemington, Maidstone, Norton, Victory.

Franklin County.—Richford, Sheldon, Swanton.*

Lamoille County.—Hyde Park, Morrisville, Wolcott.

Orange County.—Corinth, Fairlee, Thetford, Tunbridge, West Fairlee.

Orleans County.—Albany, Barton, Brownington, Craftsbury, Glover, Greensboro, Jay, Lowell, Troy, Westmore, Westfield.

Rutland County.—Castleton, Chittenden, Clarendon, Mendon, Mount Tabor, Pittsfield, Pittsford, Tinmouth, Barre Town, Cabot, Duxbury, East Montpelier, Plainsfield, Waitsfield.

Windham County.—Athens, Brattleboro, Brookline, Dover, East Dummerston, Grafton, Guilford, Jamaica, Marlboro, Newfane, Putney, Rockingham, Somerset, Vernon,* Westminster, Wilmington, Windham.*

Windsor County.—Andover, Baltimore, Norwich, Plymouth, Pomfret, Royalton, Sharon, Springfield, Stockbridge, West Windsor.

* Excused by reason of sickness.

Digitized by Google

Compulsory notification of tonsilitis would be advantageous for the following reasons:—

1. The difficulty of early and quickly distinguishing between tonsilitis and diphtheria being acknowledged, notification would be a great safeguard in the event of the disease proving to be diphtheria.

2. The communicability of tonsilitis to members of the same family or to other associates renders it a disease desirable to control.

3. The severe complications frequently associated with tonsilitis would commend it as a disease deserving careful attention by the afflicted individual and by the attending physicians.

4. Notification in this disease would instruct the public as to its contagious character, and as to the necessity of careful attention to diseased pharynx or nares.

The contagious nature of the different forms of pneumonia has been markedly shown in my experience, chiefly, however, amongst those closely associated with the afflicted individual; the necessity of notification would quickly disseminate the knowledge of the infectious character of the contagium and limit the spread of the disease.

While observers are in doubt as to cerebro-spinal meningitis being a communicable disease, yet because of its epidemic character, and our ignorance of the nature of the contagium, it would seem advisable to safeguard the public until its true nature is determined.

MAXIMS FOR PROLONGING ACTIVE AND USEFUL LIFE.

NOTE:—A maxim is useful because of its readiness of application. The mind has to reduce its conclusions to postulates before it can apply them to practice.

1. The commercial value of a life lies solely in its productive period; the other periods are a burden upon this.

2. This period should be prepared for from infancy, protected in adult life, and extended as long as possible into old age.

3. Constitutional vigor is created mainly by proper food and proper hygiene in youth.

4. No person over forty years of age should subsist mainly on animal foods, which are very good in early life. The reason for this is contained in maxim 14. The elasticity of some of the most important tissues in the body cannot be preserved by a person over forty years who continuously loads up the body with the waste products of nitrogenous foods in excess, even if he had the best food in youth. Fruits and cereal foods should be largely and generally used by all persons over forty years of age.

Digitized by Google

5. Nerves are exceedingly important. They grow best in the country. Let youth be passed as much as possible away from the crowded centers of population.

6. Education may be misdirected, and may be overdone. A good machine may be ruined by making it too elaborate. A good knife may be rendered useless by sharpening it all away.

7. Regular, moderate physical exercise is essential, and is generally neglected.

8. Do not make a burden of amusements. They may, and often are, made worse than overwork or undue worry.

9. Do not set an impossible ideal of life. It results in disappointment, and that ages.

10. Cultivate a serene mental attitude, and develop a capacity for deliberate enjoyment of whatever is at hand. The greatest pleasure often comes from little things easily and often overlooked.

11. Avoid every excess. Do not overwork, overplay, overeat, overdrink, or oversmoke, or allow yourself to become overinactive.

12. Do not assume obligations that you cannot discharge. This is the secret not only of much physical, but of much moral and mental disaster.

13. Study your diet, and your hours of labor, sleep, and relaxation, and conform to your constitutional requirements.

14. Take particular precaution to preserve by daily actions the elasticity of all tissues.

15. Maintain self-respect, avoid sordidness and gloom, and "grow old gracefully."

16. It is desirable to diversify your interests. Have one or two restful diversions, using a portion of your time away from your regular occupation and habitation.—*Teacher's Sanitary Bulletin.*

SOME DEDUCTIONS FROM THE VITAL STATISTICS OF 1905.

The total deaths during this year have been larger than for the last five or six years, being 6,339. Of these 384 were still births. As these are never enumerated as a part of the population, they may be deducted, making the deaths of persons actually enumerated to make up the population 5,955. This would make the death rate to the estimated population fifteen per thousand.

During the winter of 1905 the deaths were much in excess of the same months in previous years. Nearly half of the 5,955 deaths in the state were mainly caused by pneumonia, organic heart disease, tuberculosis, apoplexy, Bright's disease, and cancer. Of these, tuberculosis is a communicable disease, which should in the most of the 489 deaths have been prevented, by the exercise of greater care on the part of persons suffering.

Digitized by Google

from the disease in the care of their sputum, and in their general conduct toward those with whom they were associated and the public in general. The same is true to a considerable degree in the prevention of pneumonia.

The mortality from the remaining diseases could be materially reduced by the exercise of greater care in our methods of living. The "strenuous life," with its attendant nervous excitements, worries, the exhaustion of nerve force, with insufficient sleep, the time to take food and properly digest it practically omitted, or reduced to a minimum, so overwork the heart, brain and kidneys that ultimately they suffer organic change, with the result that, being unable to perform longer their normal duties in the human economy, death follows. If the individual would avoid these conditions, he must avail himself of the one remedy—live the "Simple Life."

The preventable diseases of measles and whooping cough caused more deaths than both scarlet fever and diphtheria. The two latter kill quicker, hence are more dreaded in a community.

Citizens, demand a rigid quarantine, and aid the health officer in his attempts to prevent their spread. With measles and whooping cough the laity and, we regret to say, many physicians, reiterate the old exploded doctrine that the children must have these diseases, hence let them have them while children; consequently, they not only do not aid the health officer in his attempts to control the spread of them, but advocate the exposure of all who have not had them. The immediate mortality being small, they fail to recognize the mortality that results from them, and apparently give no thought to the diseases which follow. The enfeebled conditions left by these diseases are the prepared soil well adapted for the growth of germs of many other diseases which add materially to the mortality list. When the people "rise up" and demand that all persons who know or suspect they have been exposed to either of these diseases, shall refrain from appearing in public places where numbers of persons are assembled, from traveling in public conveyances, until a sufficient time has elapsed to demonstrate that they are not to have the disease, or if they do develop the disease, that they shall remain in seclusion for such a period as may be required to so far recover as to cease to be in a condition to transmit it to others, then, and not until then, shall we cease to annually offer our dear ones as sacrifices upon the altar of ignorant traditions.

The seventy-nine deaths from typhoid fever stand as a most serious charge against the state. All sanitarians recognize that the disease may be prevented. The germ that produces it is especially a water-born bacillus. When we have polluted water, especially showing bacilli coli communis, we may be sure that intestinal diarrhœa will follow and cases of typhoid fever will develop.

In cases where the pollution affects the milk, or where flies have access to the dejections, that disease is seen to develop. All suspected cases should be examined by the Widal test, and every case should be reported.

The pecuniary loss to the state and family in the loss of life,—hence, earning capacity,—the expense of sickness and burial for the seventy-nine

Digitized by Google

cases, without adding the loss of wages and expenses of sickness of those that had the disease but recovered, we find amounts to a quarter of a million dollars.

This Board has felt that a great responsibility was placed upon them by Act 115 of 1902, which expressly empowered the Board to prohibit the use of polluted water for domestic purposes. The fact that typhoid fever was present in certain communities almost continuously, caused by the fact that the water supply of these places was polluted, seemed strongly to indicate that as guardians of the public health it would be criminal for us to allow the use of these polluted waters to continue, well knowing that in a certain number of cases sickness and death must follow such use; hence, in June, 1905, we gave warning notices to these communities, calling their attention to the facts and giving them a year in which to provide themselves with a supply of pure water. Some have complied, and the others have taken such steps to obtain such supply.

These towns, like so many others in the state, are most desirable places for summer homes for the denizens of large cities and for such as are desiring a place for permanent residence. Any attempt to deny or cover up the fact by repeated assertions that the water is not bad, that very little sickness occurs in these precincts, is futile; persons seeking a domicile in any place are sure to learn the true facts, and will certainly avoid such places.

SUMMARY FOR 1905.

Total births	7,762
Total still births	384
Total living births	7,378
Total male births	4,040
Total female births	3,695
Total unknown births	27
Total plural births	173
Total plural births (male)	82
Total plural births (female)	91
Total illegitimate births	59
Total illegitimate births (male)	33
Total illegitimate births (female)	26
Total births, American parentage	5,225
Total births, foreign parentage	1,127
Total births, father American, mother foreign	579
Total births, father foreign, mother American	709
Total births, parentage unknown	122

Total births are 22.59 per 1,000 of the population.

Total marriages	2,992
Total divorces	272

One divorce to 11 marriages.

Total deaths	6,339

The percentage of total deaths is 18.45 per 1,000 of the population.

The percentage of total deaths without still births will be 14.94 per 1,000 of the estimated population.

Digitized by Google

LIVED TO BE 100 YEARS OLD AND OVER IN 1904.

Nancy A. Kellogg, Peacham	103	years,	4 months,	20 days
Rosa Gonya, Alburgh	100	years		
Sarah B. Chapman, Bethel	101	years,	6 months	
Rose Bocage, Norwich	103	years,	2 months,	26 days
Stiles McMullen, Sheldon	107	years		
Jane Keyes, Coventry	100	years,	2 months,	26 days
Mary Mulhern, West Rutland	101	years,	7 months	
Joseph King, Milton	111	years,	9 months,	10 days
Abigail Clay Hunt, Fairfax	101	years,	7 months,	20 days
Isabella Williams, Albany	100	years		
Katherine R. Rooney, Fairfield	102	years,	6 months,	17 days
Prosper Morris, Rockingham	101	years,	10 months,	24 days

1905.

Honora McCarthy, Shaftsbury	115	years,	1 month	
Mary Ann Bradshaw, St. Johnsbury	100	years		
Isabelle Nisum, Bridport	105	years		
Nancy North Hanson, Derby	100	years,	9 months,	1 day
John Dunton, Lyndon	101	years,	11 months,	29 days
Margaret Guyette, Stowe	100	years		

Digitized by Google

Results of the Examination of Canned Meats Made at the Laboratory.

Lab. No.	Brand.	Manufacturer.	Sold at	Remarks.
41829	Rex-Vienna Sausage	The Cudahy Canning Co.	Burlington	Lean and fat meat. Preserved with a compound of boron.
41830	Peerless Cottage Loaf	Libby, McNeil & Libby	"	Fragments of muscle, fat and starchy material.
41831	Chipped Dried Beef	Libby, McNeil & Libby	"	Good quality.
41832	Helmet Corned Beef	Armour Packing Co.	"	Good quality.
41833	Deviled Ham	Armour Packing Co.	"	Muscle fibres, fat and small amount connective tissue. Preserved with a boron compound.
41834	Beechnut Sliced Beef	Beechnut Packing Co.	"	Good quality.
41835	Original Deviled Ham	Underwood Co.	"	Largely muscle fibre, some fat and connective tissue. Excellent quality.
41836	Columbia Potted Ham	Columbia Conserve Co.	"	Muscle fibre, much fat, normal amount connective tissue. Good quality.
42275	Compressed Corned Beef	Libby, McNiel & Libby	"	Large piece of normal muscle tissue with comparatively small amount of connective tissue and clear beef jelly.
42276	The Best-Veal Loaf	Libby, McNeil & Libby	"	Much starchy material, and small amount of muscle and fat.
42277	Veribest-Vienna Sausage	Armour & Co.	"	Muscle and fat predominating. Small amount connective tissue and starch. Preserved with a boron compound.
42278	Ham Loaf	Libby, McNeil & Libby	"	Muscle tissue and fat. Some starch.
42279	Lunch Tongue	Max Arns, New York	"	Good quality.
42280	Thebest-Vienna Sausage	Libby, McNeil & Libby	"	Large amount of starch, considerable muscle and fat. Small amount of connective tissue.
42281	Rex-Roast Mutton	Cudahy Canning Co.	"	Contains considerable fat.
42283	White Label Smoked Sliced Beef	Armour Packing Co.	"	Good quality.
42284	Shamrock-Smoked Sliced Beef	J. R. Smith & Co., N. Y.	"	Good quality.
42296	Chicken Loaf	Armour & Co.	"	About one-half muscle tissue. Remainder fat and starchy material.
42299	Helmet-Lunch Tongue	Armour Packing Co.	"	Good quality.
42300	Sliced Star Ham	Armour & Co.	"	Preserved with a boron compound.
42301	Veribest Corned Beef	Armour & Co.	"	Good quality.
42302	Ham Loaf	Armour & Co.	"	Large amount muscle tissue. Preserved with a boron compound.
42303	Veal Loaf	Armour & Co.	"	Considerable muscle tissue and starchy material.
42304	Shield-Chipped Dried Beef	Armour Canning Co.	"	Preserved with a boron compound.
42305	White Label Deviled Chicken	Armour Packing Co.	"	Large amount muscle tissue. No starchy material. Excellent quality.

No preservatives were found except as above stated.

Digitized by Google

Digitized by Google

614.0979
V2b
4 Pam 42

Bulletin No. 2, Volume VII.

Issued Quarterly by

Vermont State Board of Health,

December 1, 1906.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS:

The Venereal Peril in Its Relation to the State, by Ferd. C. Valentine, M. D., New York.

Hygiene of the Schoolhouse, by Hon. Mason S. Stone, Superintendent of Education, Montpelier, Vt.

Contagious Diseases in the School, by J. W. Copeland, M. D.

Milk Report.

News Items.

BRATTLEBORO, VT.

1906

Digitized by Google

Digitized by Google

THE VENEREAL PERIL IN ITS RELATION TO THE STATE.

By Ferd. C. Valentine, M.D., New York.

Lack of eloquence prevents expressing due appreciation of the honor conferred by the invitation to prepare a paper on so important a topic for a learned body of sanitarians.

The title assigned by your secretary, Dr. Holton, suggests such a wealth of literature on the subject that mere citation of the most instructive, only, would reach the proportions of a bibliographic index. It seems best, therefore, to confine this paper to a presentation of individual deductions, whatever their shortcomings.

The aim of this meeting being chiefly educational, your transactions are printed for the public benefit. For this reason it appears advisable to omit from this paper questions of purely academic interest, and to limit it mainly to practical considerations. The result will be, necessarily, a somewhat elementary treatise for an audience so scientific as the present. It is hoped that your indulgence will find compensation in such assistance as this effort can afford to support the arguments needed to awaken the interest of laymen.

But yesteryear venereal diseases were absolutely tabooed. Ears polite, even though professional, were offended by their very mention. It took decades of effort to enlist a sufficient number of the laity to establish the American Society of Sanitary and Moral Prophylaxis, whose frankly stated purpose is to combat venereal diseases. The fact that it is permissible now to discuss venereal infections and their consequences with clergymen, teachers and public-spirited citizens in general, is due largely to the work of this society, making a very reputable achievement for the short seventeen months of its existence. While mere discussion does not, and never can, yield immediate results, it disseminates at least the primary inkling of the foe to be vanquished.

In the venereal infections we have a menace to the State far greater than offered by all other diseases combined. At the very onset of the study, two reasons for this paramount peril are encountered:—

1. Venereal diseases, contrary to other affections, are not openly manifest to warn the non-infected of their presence, but when most contagious are covered by the patient's garments, or hidden within unseen cavities of the body.

2. Primary venereal infections are acquired in yielding to the most imperious of impulses, the one ever present with the majority of men, thus negativing whatever influence ordinary prudence might have in avoiding the acquisition of other diseases.

Syphilis acquired in coitu will be classed with the other venereal infections, gonorrhœa and chancroid. The attention of laymen cannot, however, be too often directed to the fact that syphilis is by no means strictly a venereal

Digitized by Google

disease. Indeed, it is perhaps as often innocently acquired as it is in consequence of immoral sexual connection.

The risks to which these diseases expose the State will be the more clearly realized on regarding it in its sociological aspect, *i. e.*, as a body composed of communities which in turn consist of families and individuals.

A brief review of the effects of venereal diseases on each of these component parts will be necessary to measure their influence upon the State as an entity.

I. THE EFFECTS UPON THE INDIVIDUAL. *a. Physical effects.* The sufferings incidental to either primary infection (gonorrhœa, chancre acquired in coitus, chancroid) are but trifling in comparison with the dangers of the diseases. It is true the pains of gonorrhœa may be agonizing, but under modern treatment they are of short duration. Ordinarily patients with acute venereal infections suffer little or not at all. This circumstance, added to the natural desire to conceal the fruit of moral weakness, and the widespread ignorance of the possible consequence, leads a very appreciable number of patients to neglect the disease. A larger number resort to the advertising quacks and nostrum venders for treatment. All present have witnessed the dire effects of neglect and maltreatment of venereal diseases. It is unnecessary, therefore, to expatiate upon them. All know, also, how much greater is the danger of these diseases when they have been neglected or maltreated.

The most frequent and important physical effects of venereal diseases upon the person acquiring them will bear a little more emphasis than mere enumeration. Such conditions as are not likely in any manner to affect the State will be entirely omitted from consideration.

Chancroid, in itself a merely local (not constitutional) disease, may destroy large portions of the penis, leaving it a mutilated organ, with which copulation is impossible. Even when the chancroid is not gangrenous or phagedenic, it may invade a region supplied with large blood vessels. These may become eroded by the ulcer, and copious, dangerous hemorrhage result. When the chancroid is situated within the urethra, the destruction of tissue may produce severe forms of stricture, with all the dangers attendant upon this affliction.

The complications of chancroid are by no means a negligible number. The most frequent thereof is bubo (*lymphadenitis inguino-cruralis*), often attended with considerable pain and evening elevation of temperature. Even though properly treated, a virulent bubo in an alcoholic, or tubercular, or strumous patient may invade the deeper tissues and open large blood vessels, leading to perilous hemorrhage. At best, such a bubo may require many weeks or months in healing, and may cause the formation of long, tortuous fistulæ and large destruction of tissue.

Phimosis and paraphimosis to a painful and destructive degree not infrequently complicate chancroid. If phimosis is not promptly relieved by free incision, the process may destroy considerable portions of the prepuce and glans. Unrelieved paraphimosis is likely to so strangulate the glans

Digitized by Google

and anterior third of the penis as to produce gangrene and consequent loss of a great part of the organ. A patient, recently seen, had lost all but a very small stump of penis from this cause.

Chancroid of the female genitals and lower urinary channel is rarely attended with such disastrous consequences as follow this disease in the male. It may, however, cause vaginal and urethral stricture as well as destruction of the labia by invasion of Bartholini's glands.

Extra-genital chancroid is singularly rare in view of its inoculability. This is particularly striking in the case of females, where the often immense extrusion of pus may keep the perineum and anus fairly inundated. Nevertheless, chancroid has been observed on the fingers, the lips, the eyelids, the breasts and the thighs of both sexes.

Chancroid of the anus and rectum is most commonly communicated by the filthiest of vices. It is believed by many to be an essentially Italian crime. A rather intimate acquaintance with Italians of all classes, however, leads to the conviction that this charge is false. Anal and rectal chancroid seem to be about equally frequent everywhere. The utmost vigilance seems to avail nothing to reduce the frequency in penal and reformatory institutions all over the world. The dangers and results are the same, relatively, as when the disease affects other localities.

Gonorrhœa, the most frequent of venereal diseases, may be slight and readily curable when affecting only the anterior urethra of individuals with good resistance. This is brilliantly shown by Woodruff,* who attained strikingly prompt results by the irrigation treatment. His patients were young soldiers, in the best possible physical state. The majority of civilians but rarely present the same conditions. Their resistance, in most cases, does not come up to normal, consequently the best directed treatment fails to prevent deep invasions or sequelæ. Frank* has shown that if gonococci persist in the urethral discharge of a fresh infection over five days after beginning treatment, the prostate or seminal vesicles, or both, will be found invaded by the destructive microbe. This dangerous complication may occur without the slightest external manifestation.

The briefest sketch of the crippling and life-endangering complications and sequelæ of gonorrhœa would carry us far beyond the necessary limits of a paper like the present. Moreover, they are too well known to physicians to warrant much more than mere mention of the most frequent, whose results may prove a menace to the welfare of the State. Merely to recall them to mind, they are set forth below:—

Orchitis and epididymitis or either, destroying a man's procreative power in very many instances.

Gonitis, resulting in ankylosis, at least reducing and most frequently destroying the patient's working ability.

*Major Charles E. Woodruff, M. D., U. S. A. "The Treatment of Gonorrhœa with Frequent Irrigations of Hot Decinormal Salt Solution." *Medical Record, March 16, 1901.*

*E. R. W. Frank, M. D. (Berlin). "Gonorrhœa of the Prostate." *Medical News* April 26, 1902.

Digitized by Google

Myositis, for a long time disabling the patient and possibly resulting in muscular contracture, rendering him temporarily or permanently a charge upon the community, if he has no relatives able or willing or bound to support him.

Invasion of the kidneys, endocardium or fourth ventricle of the brain, resulting in death.*

Urethral stricture, with all the sufferings and dangers it entails to the patient, merits mention as a menace to the State because of the frequency with which it requires hospital or dispensary care and the large number of deaths attributable to it.

Blindness from gonorrhœal ophthalmia is no longer as frequent since patients have been quite generally taught the danger of carrying pus to the eyes. Gonorrhœal iritis, however, is only beginning to be appreciated since it has been learned that gonococci can be carried anywhere by the circulation.

The innumerable other complications and sequelæ of gonorrhœa in the male, while they entail sufferings and danger, concern the individual more strictly than they do the State. They therefore hardly have place for consideration in the present paper. They have been discussed more extensively elsewhere.*

Gonorrhœa in the female is, if anything, more dangerous to the State than the same disease in the male. The degree of the danger must be considered first according to the female infected:—

1. The public prostitute, who cohabits with any number of men for hire.
2. The clandestine prostitute, the most dangerous of all, because she entices men under the pretext of not being a public bawd.
3. The female who cohabits promiscuously from mere moral perversity.
4. The innocent, virtuous wife, who becomes infected by a dissolute husband, or a faithful spouse who imagined himself cured before marriage.

Gonorrhœa in the three first mentioned is rendered the more dangerous from the fact that its presence may not be at all evident. Indeed, examination *per speculum* may give the impression of perfectly healthy organs. Yet these females may be infected and, consequently, able to infect an unlimited number of men. To show the possibilities in this regard, one instance may be cited: A girl of seventeen communicated gonorrhœa to nineteen male companions in one afternoon. The most profligate of males even could not work one half that disaster in twice the time. The menace which infected females offer to the State in the dissemination of gonorrhœa is, therefore, infinitely greater than that offered by males.

Gonorrhœa in the virtuous woman, innocently or otherwise infected by her husband, offers an immense menace to the State, in that it affects her capacity for motherhood.

---

*Since it has been demonstrated that gonococci can be carried by the blood-current, it will be nothing surprising if death from disease of other organs, wherein their invasion has as yet not been suspected, will be explained by their discovery.

*The Irrigation Treatment of Gonorrhœa; its Complications and Sequelæ. William Wood and Company, New York.

Digitized by Google

Syphilis (pox) is too well known to the public to require more than simple corrective memoranda here. The general impressions that prevail concerning this disease are derived primarily from biblical references, which describe the affliction as a plague that destroys even to the third and fourth generation. This information in the case of most adult males is further fortified by the "literature" supplied by quacks. The impressions thus gained consist mainly in the belief that syphilis is incurable, and that it "rots away the patient's nose."

In the interests of the State, it is the physician's, and more especially the sanitarian's, duty to eradicate these fallacies from the public mind, as well as several others that prevail in the same connection.

Notwithstanding the teachings of such writers as Morrow, Sturgis, Scott, and Bulkley in our own country, and Fournier, Lassar and Lesser in Europe, the public still places syphilis among the exclusively venereal diseases. The fact, however, is, as was previously mentioned, that syphilis is otherwise or innocently acquired quite as frequently as it is by impure sexual congress.

Fournier* cites the case reported by Tarnowsky of a man of seventy who contracted syphilis when eight years of age, while playing with infected children.

Upon the curability of syphilis, Fournier's latest book may again be quoted. In conclusion he says, "Syphilis is curable, from all view-points, as concern the patient and his family." This authoritative statement must not be taken to convey that the treatment of syphilis may ever be lightly considered. Quite the contrary, for to accomplish its cure, syphilis must be intelligently, energetically and persistently treated for three years. Therein only lies the possibility of safeguarding the individual, the family, the community and the State.

Given a public cognizant of these facts, syphilis can be made a manageable disease. It is peculiarly within the sanitarian's province to teach that those infected must seek advice early and they must remain under treatment and professional surveillance for at least the thirty-six months mentioned.

Whenever the person infected with syphilis is ignorant of, or ignores these facts, he or she is liable to all the tortures, deformities and dangers of death that have been so classically described in standard works. The family is thereby destroyed and the interests of the State imperiled as a consequence.

The physician, at every step of his career, sees how the number of infections could be reduced and their ravages checked. He appreciates that the first essential thereto lies ever in instructing the public upon the nature of the diseases that threaten, in order that their acquisition may be intelligently avoided or that, if acquired, they may be promptly treated. The layman thus instructed would shun the quacks and patent medicine swindlers.

The physician equally appreciates that, even though he treats an immense number of patients gratuitously, his efforts must fall far short of the necessi-

*Alfred Fournier "*En Guerit-on?*" Ch. Delagrave, Paris, 1906.

Digitized by Google

ties. The report of the committee of the New York County Medical Society* shows that there are 200,000 ambulant patients with venereal diseases in greater New York. This takes no cognizance of those in the hospitals, or those being maltreated by quacks, or who maltreat themselves with patent medicines. Assuming that this number has not increased with the population, which at the present time, according to the bureau of vital statistics of the Health Department of New York City, is 4,014,304, we have, roughly speaking, 5 per cent of the entire population, or one in every twenty, going about with a venereal disease. If the proportion is the same throughout the United States, then of the 80,000,000 inhabitants* 4,000,000 are suffering with venereal diseases. Were these equally divided among the 80,000 regular practitioners in our country each one would have in his care 50 patients with venereal diseases. Those of us who devote exclusive attention to genito-urinary diseases, venereal diseases and syphilis know that justice cannot be done a patient in less than half an hour at each visit. This estimate leaves entirely out of consideration such patients as must be treated at their homes. Judging from records of private practice, and the relative numbers of ambulant patients with gonorrhœa, chancroid and chancre and their sequelæ, the visits made to the office by fifty patients would be about as follows:—

15 visits twice daily,	or	10,950 visits annually.
10 visits daily,	or	3,650 visits annually.
10 visits twice weekly,	or	1,040 visits annually.
5 visits once weekly,	or	260 visits annually.
10 visits once monthly,	or	120 visits annually.
50		16,020 visits annually.

Fifty patients would therefore make 16,020 visits annually to their physicians' offices.

These figures would place in the care of each practitioner 43.89, or practically forty-four, patients daily. These forty-four sufferers, each requiring at least thirty minutes of his physician's time, would consume twenty-two working hours, thus leaving two hours out of each twenty-four for rest, study and food. No practitioner living at such a rate would long continue useful to the community.

Many practitioners, out of consideration for their other patients, do not treat venereal diseases at all. As a reason therefor they point to the incontrovertible fact that whenever a physician is known to devote special study to genito-urinary and venereal diseases and syphilis, his patients inflicted with these ailments become so numerous that, to do justice to them, he must exclude all others from his practice. Hence, many practitioners most competent to treat venereal cases, not wishing to abandon general medicine, unhesitatingly avow that they refer all such patients to specialists.

* *Medical News* No. 25, 1901.

* The United States Census of 1900 shows a population of 84,238,069. To speak in round numbers 80,000,000 is taken as the population in the above calculation.

Digitized by Google

Assuming, however, that our 80,000 colleagues were to charge themselves with the estimated 4,000,000 patients afflicted with venereal diseases; assuming further that each practitioner were to devote nine hours daily to this class of patients; then, out of the forty-four that fall to his care but eighteen could receive the requisite attention. This would leave 2,080,000 times daily when the care of such patients would be omitted. Without new infections, they would amount to 759,200,000 in each year. The danger to the State through these patients who could not be treated, is too evident for discussion.

These facts and numerous kindred ones that could be cited, did time permit, seem at present to be understood by physicians alone. They alone are able fully to deprecate the non-existence of special institutions where these unfortunates might be successfully treated.

In order that such institutions may be established, the lay public must be instructed in the dangers that menace it, individually, as families, as communities, and as a State, from venereal diseases. Unfortunately the subject does not appeal to the average layman. He can be made to lend a willing ear to the matter only when suffering from a venereal disease, or when his son is so unfortunate as to become infected; but as soon as cured he declines to further burden himself with the matter. The men who, for other public objects, contribute in generous measure, refuse to head or aid any movement for the establishment of an institution for the special treatment of venereal diseases. The general public still fears any connection with such an object, persisting in its blindness to distinction between venereal diseases and a propaganda of enlightenment aimed at their prevention.

Those spurred by a healthy optimism may, however, find encouragement in recent reports of the German Society for the Suppression of Venereal Diseases. These show that in the fourth year of its existence this society has 5,000 members, working to combat these destructive infections and their results.

An opposing force, adequate to accomplish appreciable results in the prevention of these ailments, is predicated upon a movement in which the public joins. The need therefor can be brought home to the people by some plain, everyday facts.

In another effort* attention was given to the reduction of working capacity in a person infected with venereal diseases. This reduction is manifest to the patient as well as to his physician. It lasts as long as the infection continues. To present this loss of working power, we may resort to figures, as we did in the paper quoted. If the average earning ability of an infected person be reduced by only fifty cents per day, then the 350,000 inhabitants of the State of Vermont lose $8.750 daily, or $3,093,750 annually, by venereal diseases. Yet, were your legislature asked to appropriate but one tenth of that sum to at least reduce the ravages of these diseases, the petition would probably perish in committee. One contrary argument, silly as it is powerful, would be that such an appropriation would have the

*The Prevention of Venereal Diseases. *Ohio Sanitary Bulletin*, March, 1906.

Digitized by Google

appearance of fostering vice. As your guests, the authors may seem ungracious to make so violent a statement. Yet, in a matter of such transcendental public importance, it would be unpardonable to mince words. Let it be hoped that your legislative representatives are so imbued with the paramount importance of the public welfare that they would differ from those of several other States.

The destructive physical influence of venereal diseases on the individual and through him on the State merits study from all view-points. It is therefore proper that we look for the men who are least exposed to infection, best able to resist it, less prone than others to infect their wives, and of less detriment to the State in consequence. These conditions for minimal injury are found in our army. To obtain exact information for presentation herein, recourse was had to an officer known as an able and interested observer. Beside his standing in the medical service, he is eminent as a writer on venereal diseases.

Major Charles E. Woodruff, Surgeon U. S. A., now stationed at Plattsburg Barracks, N. Y., had the courtesy to send the following reply:

"The last report of the surgeon-general says, on pages 14, 15 and 55:

By far the most important diseases affecting the efficiency of the army during the year have been the venereal, which were first in admissions (188.34), non-effectiveness (12.17), and discharges (3.69), causing 16 per cent of all admissions, 28 per cent of all non-effectiveness, and 18 per cent of all discharges for disease. There were constantly on sick report for this class of disease 715 men, equal to the loss for the entire year of the service of eleven full companies of infantry. The admission rate was considerably higher than for last year, venereal diseases having advanced from third place to first.

The control of these diseases lies largely in the hands of the civil authorities, and one of the most important steps to that end would appear to be the classing of diseases of this character with other infectious diseases, and the requirement that they shall be reported as such and controlled by health departments.

In the military service a similar course would be followed. At many posts a regular physical inspection of the enlisted men, stripped, is held once or twice a month, and all men found suffering from venereal diseases are placed under treatment and kept under observation and such measures of restraint as may be necessary until they are cured. It is recommended that these measures be required at all posts.

Soldiers suffering from syphilis, unless with infectious lesions, do not ordinarily require to be excused from duty while undergoing treatment, hence their discharge for disability should be exceptional; but owing to the frequency of relapse, it is recommended that no soldier who has had syphilis should be reënlisted unless his character and the nature of his service is such as to entitle him to special consideration.

As a cause for discharge for disability venereal diseases led (3.69), tuberculosis was second with a rate of 1.80, insanity third, rate 1.46, and organic disease of the heart fourth, with 1.36 per thousand of mean strength.

It will be seen that the prevalence of these diseases (gonorrhœa, chancroids and syphilis) is steadily increasing, both the admission and non-effective rates being higher than for the last year, though the death and discharge ratios were slightly lower.

Digitized by Google

Following this significant abstract from the surgeon-general's report, Major Woodruff continues:

"The loss to the government is difficult to determine, but estimating that the soldier costs about $1,000 per year, the government loses three fourths of a million dollars a year from venereal diseases in the army alone.

"These figures give a false impression of the soldier's morality, because venereal diseases constitute the vast majority of the diseases of young men in every walk of life. I am quite sure that our soldiers suffer *less* than an equal number of civilians of the same age in the same walks of life.

"The comparison with foreign armies is as follows:—

CASES PER 1,000 OF MEAN STRENGTH.

	Alcoholism.	*Gonorrhœa.*	*Syphilis.*
American (1905)	25.50	120.97	33.98
British (1902)	3.20	70.50	75.00
French (1901)	.11	17.50	6.70
Prussian (1902)	.09	12.00	4.00
Bavarian (1901)	.19	14.30	4.30
Austro-Hungarian (1903)	.00	30.10	19.20
Dutch (1902)	.04	17.30	4.90
Russian (1902)	.10	21.90	12.80

"The comparisons with foreign armies are not fair, because of the different methods of keeping records. We record every case excused from any part of his duty, while some foreign armies record only the cases sick enough to go to hospital, ignoring all others under treatment."

Major Woodruff, during long service in the army, and with careful study of all that affects its welfare, has given special attention to the questions of alcoholism and venereal diseases in the service. In his letter, above quoted, he emphasizes the increase of drunkenness and venereal diseases in the army since the old canteen system has been abolished. While soldiers were able to obtain light wines and beer within the army posts, sobriety and morality among the troops averaged much higher than at present. The men, being forced now to seek diversion outside the posts, are not easily controllable. The whiskey interests were not slow to see their own advantage. The establishment of low dives around the army posts, where drunkenness on the vilest liquors is encouraged, and where venereal diseases are disseminated, is a direct consequence of the abolishment of the canteen. Major Woodruff concludes: "As a result, I have treated at this post more cases of acute alcoholic insanity than in the rest of my service, and alcoholism is, as you well know, often the parent of venereal diseases."

Comment on this condition of affairs is unnecessary. The soldier, more than any other class of citizens, exemplifies the injury which the State suffers through the physical effects of venereal diseases on individuals, because, being under military surveillance, reliable data are ascertainable.

b. Moral effects. Intimately related with the physical effects of venereal

Digitized by Google

diseases, whether as cause or consequence, is the moral depression associated therewith. It is within the experience of every practitioner that his venereal patients manifest an astounding lack of moral sense, oftentimes so complete and so inconsistent with the patient's apparent intelligence and culture as to compel the conviction that this loss of moral tone is attributable to the toxines generated by the gonococcus, or by the *spirochæta pallida* (assuming this as the definitely proven microbe of syphilis). Ravogli* distinctly holds this view. His deductions are made from examination of prisoners held for major crimes. Nine out of ten were found to be sufferers from venereal diseases or their consequences. What prevails in Ohio would very likely be applicable in other jurisdictions. The matter is deserving of the closest investigation by criminologists. The extent to which venereal diseases debase moral consciousness cannot be known. Ravogli's investigations create at least a well-founded suspicion that the State is ever put to tremendous direct expense in trying prisoners and maintaining convicts whose crimes may well be in large part due to the reduction of *morale* traceable to venereal diseases. These facts should be made plain to the tax-paying members of the community. Their appreciation eventually must cause citizens, even those entirely devoid of public spirit, to understand the need of an active interest in the reduction of venereal diseases.

c. Psychic effects. An attempt at procuring the statistics of venereal diseases, as an etiological factor in insanity, was made by the present writers at the Manhattan State Hospital. While very many of the patients presented evidences of acquired venereal diseases, most records contained no mention whatever or positive denials thereof. The late lamented Dr. E. C. Dent, medical superintendent of this grand institution, explained this on the score of wilful suppression on part of the relatives of the patients committed, of any venereal taint in their histories. This may well be assumed to be due to a popular fear, stupid as it is unfounded, that such knowledge might cause the medical staff to neglect or maltreat the unfortunates. Singularly enough, alcoholism is but rarely denied. Despite the endeavors of the families of patients to conceal venereal infections, we may accept the records of the Manhattan State Hospital, now under the able directorship of William Mabon, M. D., as a fair example. This institution has 4,400 beds, continually filled. The maintenance of these patients costs the state of New York forty-six cents each per diem, making a total of $167.90 per annum. As far as ascertainable, venereal diseases enter as a factor in the conditions that caused the commitments of these patients, in 8.15 per cent of cases.* Simple computation shows that $60,209.94 must be raised by taxation annually for the support of this 8.15 per cent of patients. How

*A. Ravogli. "Syphilis in Relation to Crime," Presented before the Ohio State Medical Society, May 6, 1903; to be published in the *Ohio State Medical Journal.*

*NOTE—The above figures are from the official records and were kindly supplied by Dr. Wm. Mabon, Superintendent and Medical Director, to whom thanks are hereby given. The calculation, however, cannot embrace that doubtless large number of patients in whom the venereal origin of their mental ailment was not discoverable.

Digitized by Google

gracefully and willingly the state of New York sustains this burden is manifest to even casual visitors. To those of us officially connected with this immense hospital, it would be difficult to say in what regard the management could be more wisely generous. Yet knowledge of the present public sentiment precludes asking the State to provide means for thwarting the factors that make for so much mental and physical disaster and for such enormous expense. It must be kept in mind, however, that at this moment but one institution, albeit the largest, is being considered. The sum total for the United States is naturally beyond computation.

II. THE EFFECTS UPON THE FAMILY. The State relies essentially upon procreation in *vinculo matrimonii* for its numerical strength; its material development and intellectual advancement are equally dependent thereon. These purposes of marriage are thwarted by venereal diseases.

a. The wife. Men marry before they are cured; they infect their wives. Conservative authors agree that 80 per cent of the women who die from diseases of the reproductive organs are killed by gonorrhœa. Besides, women infected with gonorrhœa are just as liable to the constitutional metastases sketched before, as are males. They are further exposed to the dangers of the major operations (ovariotomy, pan-hysterectomy) so often necessary to save their lives. If this purpose is accomplished it leaves them wrecks of womanhood, deprived of exercising the noblest function belonging to their sex, maternity.

The normal woman's impulse to motherhood is also thwarted by venereal diseases, even though she escape infection. Reference is here had to the large number of men made sterile by gonorrhœa.

b. The offspring of venereal parents. The very large number of abortions, when the product of conception is syphilitic, is well known to the profession. Of the children born with hereditary syphilis, most are mentally, morally or physically defective. What percentage of these become a burden upon the State is not definitely known. The large number thereof in charitable and punitive institutions is striking.

Formerly no less than 80 per cent of the hopelessly blind in charitable institutions had lost their sight by gonorrhœal infection during birth. Cut off from God's daylight, their deprivation of sight can hardly be appreciated by those whose eyes were not destroyed. Had the fathers of these unfortunates known that they might work such disaster through their uncured gonorrhœas they would have been deterred from marriage. The expense of maintaining these unfortunate innocents was tremendous.

Happily, since the generalization of the Credé method many cases of blinding infants by gonorrhœa during parturition have been averted. The public has still to learn that a gonorrhœa, no matter how long since its crass manifestations have subsided, may infect the wife. It then may continue without appreciable symptoms. During childbirth, gonococci held residual in the tissues, are brought forth and rapidly multiply. Only exceptionally can the babe's eyes escape them. The new being, entering life with all the rights to health and happiness, is then likely, within forty-eight hours,

Digitized by Google

to be forever deprived of sight. The pathos of this outcome alone appeals to philanthropy. The sordid view of it is that the State has another defective to maintain.

III. THE EFFECTS UPON THE COMMUNITY. The preceding is offered to show some of the ways in which the State is injured by venereal diseases. The State's strength, like that of a chain, can but be measured by its weakest link. The feeblest part of that chain is the citizen damaged by a venereal infection or its results.

The present effort does not embrace suggestions towards remedying the evil. Propositions to that end have been discussed in another paper.* A step in the proper direction has been made by Indiana. The courteous secretary of its health board, Dr. Hurty, sent us the new application for marriage license, from which it is apparent that the State regards venereal disease as a disqualification for the matrimonial alliance. Though some applicants for the license will, undoubtedly, perjure themselves to obtain it, the educational influence will eventually make itself apparent.

The various points in the foregoing paper, to which your consideration is asked, may be summarized for convenience of discussion:—

1. The public should be thoroughly informed on the dangers of venereal diseases to the individual, the family, and the State.

2. Tireless agitation of this matter is as necessary as it ever was, in order to arouse the same activities of the public and State in the prevention of venereal diseases that have been so successfully directed in the fight against tuberculosis.

3. Venereal infections are more dangerous to the State than are all other diseases combined, including tuberculosis and alcoholism.

4. Continuation of the policy of ignoring venereal diseases maintains their ruinous effects.

5. Venereal infection is the more powerful for evil, because of its very slight and few external manifestations.

6. Venereal diseases could be entirely stamped out if all mankind abstained from extra-marital coitus. As humanity is now constituted, however, such a pious hope has a place only in speculations on the very remote future. True, there are many men and most women with moral strength enough, or sufficient lack of sexual desire, to succeed in life without coitus, but the majority yield to the impulse, as they have since before recorded time and probably ever will. This view is not presented to offend those superior men, who advocate continence on religious, ethical and physical grounds. They think, as they live, on a higher plane than most. The majority, however, is weak and yields to the naggings of sexual desire. It is to protect the majority, as well as the better minority, from the results of this weakness, that heroic, energetic, persistent work must be done.

7. Combating venereal diseases must ever be with the dual thought of protecting the individual and safeguarding the State.

*The Prevention of Venereal Diseases. *Ohio Sanitary Bulletin*, March, 1906.

Digitized by Google

8. The methods employed must necessarily vary according to the persons conducting the battle. Those who differ should aid and abet one another, as all have the same end in view. All, however, must concede that no one method is equally applicable in all instances. The persons fortunate in possessing religious inclinations are best influenced, no doubt, by religious warnings. Those who have no religion are best guided by the wise direction of self-interest or public spirit.

9. The most difficult task in our work is to awaken receptivity for correct appreciation of the venereal peril. It is a subject concerning which no general desire for knowledge exists. The study offers no allurements, except when the one to be taught is infected, or when one near and dear to him is the sufferer.

10. Venereal diseases should be considered like all other infections, from the view-point of their dangers to the individual and the State.

11. Every individual should be taught as thoroughly as possible that:—

a. Gonorrhœa is a dangerous disease, which may invade the kidneys, heart or brain and kill the person infected.

b. The toxines which the gonococci generate, reduce the thinking and working capacity of the person affected.

c. The toxines of the gonococci may invade the muscles, producing gonorrhœal rheumatism, with its crippling results; the gonococci themselves may invade joints, resulting in loss of the joints; they may enter the epididymes, provoking most painful inflammation of these organs, which inflammation is likely to be followed by sterility; they may invade the prostate, together with other microbes, producing dangerous prostatitis.

d. Gonorrhœa most frequently produces stricture, with all its attendant dangers.

e. The disappearance of the crass manifestations of gonorrhœa, does not prove that the patient is cured; he may at any time infect his wife and so produce her death; he may, by infecting his wife, cause the blindness of his children; residual gonococci he may harbor can at any time break forth, producing an apparently new infection, with possible family disruption in addition to the other complications that may result.

f. Chancroid, though but a local disease, may entail much physical suffering, may be attended by serious complications and lead to such destruction of the penis as to render copulation impossible.

g. Syphilis, though not strictly a venereal disease, is readily acquired in coitus; it can be followed by most serious consequences to the patient, his wife and children.

h. All venereal diseases embrace greater danger to the individual and offer a greater menace to the State than do all other diseases combined.

12. The only manner, at present known to check the disastrous results of venereal diseases, is to impress every layman with the need of:—

a. Distinguishing between quacks and regular practitioners, and avoidance of the former.

Digitized by Google

b. When infected, innocently or otherwise, to promptly secure the advice of a conscientious practitioner.

c. Not to marry until exhaustive examination by a competent physician has shown that the sexual relation offers no danger to the wife and future children.

13. Every physician, and especially every sanitarian, should exercise all the influence in his power to induce State appropriations and gifts of the wealthy for the establishment of special hospitals and dispensaries for the study and treatment of genito-urinary and venereal diseases and syphilis.

These are the steps that first seem necessary in the common object we have in view. Many others are self-said. Each one is beset with difficulties.

Those of us who study venereal diseases and daily see the horrors wrought by them need not be advised or encouraged in the arduous tasks that lie before us.

You, who have so indulgently overlooked the shortcomings of this presentation of facts and deductions, will see therein but one desire: It is to coöperate as far as possible with your endeavors for the benefit of humanity.

May future generations bless your efforts on behalf of the ignorant, the most unfortunate and the most unhappy of all sufferers, those affected with venereal diseases.

DISCUSSION.

Dr. W. W. Townsend, Rutland.

I think it would be becoming in each and every one of us to congratulate ourselves on having the opportunity of listening to such a paper as we have just had the pleasure of hearing from so distinguished a guest as Dr. Valentine.

When I came into the hall I jotted down some few things I intended to say a word on, but as Dr. Valentine proceeded with his subject, I checked them off one by one until there were two left. These two were probably incorporated in the portion of the paper which Dr. Valentine omitted.

I want to emphasize the fact that a gonorrhœal infection in the female is often not recognized when it is capable of infecting others. I regret to say that we have in this state men who are styled examiners of houses of prostitution. They go to these houses, make hurried examinations of the inmates and then certify over their signatures to the immunity of the holder from venereal disease. Certificates of this description assure the possessor and patron of a certain amount of false security.

I don't see how the health officer is going to prevent this state of affairs unless he appeals to the doctor's better self and thus induces him to stop this nefarious practice. I have had numerous men come to me who have been infected by women who have exhibited certificates such as I describe, both prior and subsequent to exposure.

Digitized by Google

The subject matter of Dr. Valentine's paper was the prophylactic treatment or preventive treatment of venereal diseases, and as health officers, unless you are physicians, I do not see how you are able to aid in their prevention. It remains with physicians to instruct patients of the seriousness of venereal infections.

In the army the soldiers have the advantage of gratuitous medical attention, but when it comes to being treated for venereal diseases they almost always employ a civilian physician.

I see a great many prisoners at the house of correction who have been soldiers in the army, and in getting their history with regard to previous treatment, I have been surprised to find that most all of them have been treated by civilian physicians. I presume this is due to the fact that the army physician is strict and thorough with them regarding the treatment and personal hygiene, and these conditions, as a rule, do not appeal to the average patient who is simply looking for the disappearance of the discharge.

I think there should be laws enacted prohibiting druggists from prescribing for all patients, and especially venereal cases. The druggist is asked quite frequently to prescribe for such maladies, and he, instead of sending the person to a reliable physician, gives the old-time astringent zinc and copper for an injection and balsam of copabia for internal medication, and as soon as the discharge lets up, the patient considers himself cured and goes out into the world again spreading the dread disease, of which he is the unconscious possessor.

Dr. Henry D. Holton, Brattleboro.

This is not my first experience in trying to discuss a paper of Dr. Valentine's. The fact is, he has never left me any opportunity to discuss a paper; he covers the entire subject, and the one he has taken to-day has been thoroughly exhausted.

All of you men who are physicians have been seeing constantly during all your practice the secondary effects of these diseases. We are, here in Vermont, a pretty moral people, and we ought to exterminate these diseases. I am sorry to say that venereal diseases are present here to quite an extent.

It is said by pretty good authority that all of the diseases of the genito-urinary organs of the female are the results of gonorrhœal infection. The case that Dr. Valentine spoke of this morning of the bride who was infected on her lip from drinking from a water glass is a good example of how the innocent are infected. It always makes me shudder when I see people drinking from the common cup which we find on the trains.

We have no statistics of these diseases in this country. I think the statistics presented by New York were rather estimates than by actual count. I believe it was stated to be 200,000 cases.

It occurred to the committee appointed by the state and provincial boards of health that this was a matter for the sanitarian to report upon. There

Digitized by Google

was a certain form of letter handed to the patient when he would go for treatment, so that he would not infect others, and then the physician was asked to report the case. You doubtless have all had a letter of this kind, for this board has sent out that circular to every physician in the state and also the letter of inquiry. Why have n't the physicians replied? I don't know. I have got reports from about one fourth of the towns, stating the number of cases which they had seen during the previous year. The object was that we might generalize in some way what we should do. I hope you will thoroughly understand the necessity for this reporting and that you will go back home and tell your brother practitioners to hunt up those blanks and just flood my office with them during the next three months. Ask your brother practitioners if they have reported. This would give us a basis to work upon. These blanks and letters have been sent out in Florida, Ohio, and Michigan, and perhaps in other states, but they are all meeting with the same success as we are meeting here in getting statistics.

There is much that can be done by the education of the laity. We must go to the young; the older people have so far advanced in this particular sin that there is n't much use in trying to save the middle-aged, but we must try to save the young people. These letters should be sent to all principals of secondary schools and colleges; an address should be given to the young men from time to time or form them into classes and instruct them with reference to this subject. That has not been done to any extent in this country. Harvard claims to do something in this line; once a year they talk to the freshmen class regarding this subject along with other subjects, but nothing is done to any great extent in instructing the young men of this country regarding the terrors of these diseases.

About a year ago I received a letter from a trustee of an academy in the state having from sixty to eighty pupils, nearly one half boys and the rest young men, asking if I would fix on a time to talk to these young folks on this and allied troubles. I never had a better audience than I did at that academy. What the result is going to be I don't know. One great trouble is, that this subject has been tabooed. If a man, a few years ago, got up before a medical society to deliver an address on this subject, one half would go out and the others stay and afterwards make a little fun over the subject. We at least have advanced a little when we have such an interested audience present as we have here to-day. We should have them all feel that it is not only a sin against their morals, but a sin against their physical conditions, for the sins of a father may be visited unto the third and fourth generations.

The health officer should at least make some effort to control the disease. We are ready to do our duty every time, but when in the face of asking in a pleasant letter addressed to the physicians for the number, whether two or ten, and receiving so few replies, what is the use of asking them until they understand better that these reports are going to give us something to work upon in exterminating these dreadful diseases?

Digitized by Google

There is not one hospital in this country which takes these patients and treats them. We ought to provide for them as we would for a person who fell down and sprained his ankle. A good Christian woman came to me a few months ago and said, "Do you know such a young woman?" "Yes," I said. "Have you ever treated her?" "Yes." "She has applied for a little aid, and I understand she has not been a good girl and she has had some diseases which she should n't have had. Now, if that is true, I don't think we want anything to do with her." I said, "Are you the Good Samaritan, or are you the priest and the Levite? We, as physicians, would treat this patient just as well and just as carefully as though she had fallen down and broken her leg."

I don't expect to live long enough to see any great change in this matter, but I want to do what I can to bring the people up to what they ought to be.

Dr. L. M. Greene, Bethel.

In regard to the question of why the health officers have not reported the number of venereal cases, I believe that one tenth of the doctors do not know how many they have had. Since that letter was received we have kept a record in our office, and we will be able to report at the end of the year, and I suggest, as that letter made the suggestion to me, let us try to apply ourselves to the task of helping some one to gather statistics on these diseases, in order that we may know how the different states stand with regard to the same.

Dr. W. W. Townsend.

I am glad that Dr. Valentine has shown me where the health officer can be of help, and when these poor afflicted ones come tell them what you have heard here to-day.

N. J. Kingsbury, Walden.

I want to ask Dr. Holton if it is not generally to be understood that in reports from health officers they are not required to give the name of the individual cases, but just state the number.

Dr. H. D. Holton.

With regard to venereal diseases, just state the number of cases that come to your attention.

Ferd. C. Valentine, M. D., New York.

Words fail to express the deep appreciation of your kindness to the paper presented. You have given the effort value by the discussion with which you favored it. You will permit individual reply to the gentlemen who so earnestly and learnedly took up the matter.

Dr. Townsend of Rutland shows that the custom of examining inmates of houses of prostitution still prevails here. This provokes at least astonishment. The uselessness of such examinations must be evident on a

Digitized by Google

moment's thought. As has been shown in a little book whose title need not be repeated, as it was referred to in our paper, it takes at least ten days to determine whether a female is free from gonorrhœa. No prostitute will refrain from plying her trade for such a period after every exposure. But even assuming that she is as free from disease as she appears to be at the examination, she may within ten minutes thereafter cohabit with a man who has clap. Infected, she will then distribute the disease to innumerable men before the next examination, all the time armed with a certificate of health. The uselessness of such examination and certification is made evident by this fact alone. But the examination of prostitutes, as it necessarily must be performed, is a purely perfunctory procedure. Granting that every examiner is conscientious in his work, he cannot, in a few minutes available for the purpose, discover more than a crassly manifest gonorrhœa, an active chancre or chancroid. Any or more of these being present, he will not issue a certificate. But it is now well known that women may have venereal diseases, and be capable of transmitting them, without showing any active symptoms for years. The time that an examiner can devote to each prostitute is so short, and the compensation therefor so small, that the finer details necessary for effective work, are inevitably excluded. Consequently, whenever the presence of venereal disease is not determinable at the moment of examination, the bawd receives a "clean bill' and is thus made a hundred-fold more dangerous to the community in consequence of the examination. Moreover, the certificates are in themselves a menace to public health and morals; the prostitutes use them as an additional incentive to the prosecution of their vile trade. Males, ignorant of the facts crudely outlined, feel perfectly safe from the dangers of infection when shown these certificates. They thus become warrants for immorality, provoking males into exposing themselves to infection with all its dire results upon the family, the community and the State.

Dr. Townsend doubts whether health officers can do much in the prevention of venereal diseases. This assertion is open to frank disagreement. The greatest work of the health officer is to enlighten the laity in the prevention of disease. Every step of his work is educational. Wherever he encounters unwillingness to be educated, he has the wand of authority to compel obedience to health ordinances. True, venereal diseases are not thoroughly recognized by the law; in this sense much remains to be done. It is through the health officer's official influence that laws will eventually be enacted, which will protect the public from venereal diseases. One of these laws will be to require every physician to ascertain the name of the prostitute who infected his patients and, by reporting her, lead to her incarceration until cured. During that period, at least, she will be unable to infect others.

Dr. Townsend mentions the fact that soldiers, when infected with venereal diseases, seek the advice of civilian physicians. In a great measure this is true, especially as regards officers. The army surgeon is obliged to closely record the ailments of all his patients. It militates against the soldier's

Digitized by Google

advancement to have against his record a disease "not acquired in the line of duty."

Dr. Holton, your worthy secretary, facetiously remarked that venereal diseases should not occur in this State, because the Vermonters are a very moral people. There is every reason to consider this the most moral State in the Union. Its safety from infection, however, is by no means assured while others, let us say New Yorkers, are permitted to cross its borders. Dr. Holton further comments on the fact that the 200,000 cases of venereal diseases in New York were not obtained by actual count. They could not be and the number mentioned is most probably a gross underestimate. The committee appointed by the County Medical Society sent out circulars of inquiry to all the practitioners of our city. The dilatoriness of busy physicians, as far as concerns correspondence, explains, in a measure, why only one seventh of our colleagues answered at all. It was from these replies that the estimate was made. Worse indeed in this regard were the physicians of Ohio. In January, 1906, its state board of health sent out 10,000 circulars of inquiry. To these 10,000 circulars only thirty-seven answers were received. Manifestly this method of obtaining statistics on venereal diseases can never give more than approximate results. Yet, every practitioner knows how the venereal element enters into his work, even though he avoids it because of the popular prejudice that exists.

Dr. Holton mentions the case of extraordinary immorality in a young girl. The poor thing in her ignorance should have the mantle of charity cast about her. Forgiveness should be implored for her, for she knew not what she did. Far worse than any such unfortunate is a case that recently was related by one of the most brilliant general practitioners in the upper West Side, a fashionable part of New York. At one of the dispensaries connected with a church, a married man presented himself with gonorrhœa. The pastor happened to be present. In what he possibly thought righteous wrath he forbade the physician to treat this man and ordered him cast out into darkness. He might have received the sinner with kindness, might have helped him to be cured, might have warned him of the danger he presented to his wife and children, might have led him back to the paths of morality. But he did not. Six months later the patient's wife was obliged to have her womb and ovaries removed that she might live; of his five children four became hopelessly blind, the other lost one eye. How that clergyman will justify himself to his conscience is beyond understanding. The unfortunate creature Dr. Holton mentioned had ignorance as an excuse. The clergyman just quoted, if he was ignorant, is personally responsible for his ignorance, as he had opportunities of enlightenment.

Dr. Holton says he does not expect to live long enough to see any change in the present condition of things, as regards venereal diseases. As we are about the same age, it may be safely hoped that we will both live long enough to see a better understanding of these diseases by the public and consequently an improvement in the present disastrous condition. There can be no doubt that to-day's discussion will prove one of the

Digitized by Google

elements that will help to free the innocent at least from their greatest peril. What if we do not live long enough to witness it? If we continue to agitate the matter energetically, tirelessly, incessantly, we will but have done our duty to humanity. After us others will take it up. Then what you have done to-day and will continue to do, will live.

Gentlemen, cordial thanks are due you for the honor of appearing before you, for your indulgent attention to a mere sketch, and for your kind discussion.

HYGIENE OF THE SCHOOLHOUSE.

BY HON. MASON S. STONE, SUPERINTENDENT OF EDUCATION, MONTPELIER, VT.

It is a privilege for me to be present at this meeting of the State Board of Health, and likewise to meet with you gentlemen who are not simply the guardians of the public health, but of the virtues and morals of your communities. It makes no difference what you are, a homeopath, allopath, or osteopath, for all paths lead but to the grave.

I feel that it is a little presumptuous for me to appear here this morning for the purpose of instructing you on a subject upon which you should know far more than I do.

It has been my pleasure in times past to travel with Dr. Holton about the state and I have acquired a few terms and learned quite a little regarding the public health work in this state.

It is said that a Frenchman when drunk will dance, a German will sing, an Irishman will fight, an Englishman will eat, and an American will make a speech. I am not here to make a speech, but to talk over with you some of the things affecting the welfare of the children, and to make one or two suggestions inviting your coöperation for a better condition of the school buildings.

When the town system was born in 1892, a new condition of affairs was inaugurated in this state, and this new condition of affairs pertained to the housing of the school children. During the years 1896 and 1897 more than twice as much money was expended in this state for the construction of schoolhouses as was ever expended in this state under any district system, and more than 50 per cent was expended for repairs.

On the eastern side of the state there is scarcely a community in which there has not been constructed some commodious and comfortable schoolhouse and in all the large towns and cities of the state we will find some beautiful buildings. These have been constructed not only for the comfort and physical welfare, but likewise something of the esthetic character is quite noticeable. We all know that if the children have such environments

Digitized by Google

as will contribute to their cheer, their dispositions are to be governed accordingly.

In the time of the Greeks, the people had specific ideas. The Egyptian, life; Hebrew, purity; Anglo-Saxon, liberty. They studied for art in song and they adorned their tombs and beautified the interior of their homes with tapestry. Within the lifetime of one man, there went out from Athens, a city no larger than Burlington and Rutland, over thirty men distinguished in history, renowned for letters, art, poetry and song; and if we can so construct our school buildings that the environment about those children will impress upon them the ideas of beauty, so they may see the true, good and beautiful, we are going to produce a better class of citizens than previously existed.

Some of you sitting here know of the old-time schoolhouse; windows broken; the panels of the doors kicked out; the walls marked and dirty; the desks carved year after year; and the seats so hard and ill-fitting that they were more conducive to rheumatism and spinal troubles than to comfort. It was impossible to heat the buildings properly. You would go through all the degrees of temperature from the torrid to the frigid in passing through the schoolroom.

Through the State Board of Health there are higher and better ideas being inaugurated for the comfort of the school children. Boys and girls come to school from various homes; some of them properly fed, some of them underfed; some of them properly clothed, some of them poorly clothed, and some of them so uncared for that they are filthy. These are some of the conditions which the teacher must meet. There is another element pertaining to the physical condition that you gentlemen can give your attention to and coöperate with the teacher, and that is with regard to proper exercise of the children. To a certain extent, I do not favor the one session idea which is so prominent in some sections, that is, giving a solid session. It may be all right, but I believe that the boys and girls should be given an opportunity to get out into the school yard, and romp and revel and enjoy all the air, sunshine and play that they can; and I want to urge that if any of you gentlemen are consulted regarding this matter, you will all see the benefit the boys and girls will derive from an interval between the sessions; that is, not a solid session.

Now, with regard to the location of the schoolhouse; if any of you gentlemen have anything to do with the location of a schoolhouse, you will see that it is located on proper soil and in a desirable place, with a pleasant outlook, in order that it may be attractive, and that there shall be ample school grounds for the children to exercise in. These matters can be attended to by the health officer in each district. I believe that there is no more fruitful source of polluting the minds of the boys and girls than the outbuildings of a common country schoolhouse. There is nothing that corrupts them as the conditions that exist about the country schoolhouse in the State of Vermont, and as health officers you should carry on a campaign for the benefit of the boys and girls of this state. There is your grand

Digitized by Google

opportunity, and it is a matter which should receive the very serious consideration of every one of you.

Sometimes school boards will attach outbuildings to the school building itself, when they should be set at least twenty feet away with a fence around them. The boys and girls should have separate compartments, and they should be situated one on each side of the buildings, and should be painted and properly cared for.

With regard to the interior of the building, there are questions of light, heating and ventilation, and seating, which should occupy our attention.

It has generally been conceded that the light should come to the left of the pupil and no light from the right side. Towns appropriate money and school boards go ahead and construct schoolhouses with a door in the front and three windows, or perhaps four, on each side; you can do better than that, gentlemen. Now, if your town is thinking of constructing a building to be used as a schoolhouse, I wish you would make a suggestion or two to your school board. Those cross lights are injurious to the eyes of the children. It does n't cost any more to put up a building that is artistic. If the windows are on the left hand of the children, the light will stream onto the right side. I am going to ask all of you health officers present to make this suggestion to your school boards, that they will accept no plans for building a schoolhouse that are not attractive and will not be an ornament to the town.

When you come to the matter of heating and ventilation, I have not much to say, for I am sure that the work that Dr. Caverly and Dr. Holton have done in the state has suggested to you all the best means for heating and ventilating your schoolhouses. The cold and foul air settles down low and the hot air rises. The higher up you go the warmer it is. Thus the conditions as they exist are that the child's feet are cold and his head hot, while his feet should be warm and his head cool. How is this problem going to be solved? You must either reverse the laws of nature or have the boy stand on his head. The State Board of Health has advocated the use of the jacketed stove. This is the ordinary box stove covered by a jacket of galvanized iron, with an air space of from six to nine inches between the stove and jacket, and provided with tubes made of tin of sufficient size and suitably placed to allow of ingress of fresh air and egress of foul air. I believe one of the best ways of ventilating in case there is no other system established is to have a schoolhouse so constructed that the windows can be lowered from the top; the hot air in the room rises, the cool air comes in, and meets the hot air and becomes mixed and freshens the entire air in the room. It is rarely that you see a country schoolhouse where you can lower the windows properly. We should require a supply of not less than thirty cubic feet of pure air at 66 degrees Fahrenheit per minute for each pupil, and that to be distributed to all parts of the room without producing uncomfortable currents. Anything that will change the air in the schoolroom without in any way creating a draft is a suitable manner of ventilating.

Now with regard to the seating of the pupils. Here is the desk and

Digitized by Google

here is the seat. The question is, What about these desks? The only suitable one is the adjustable desk and seat. The seat should be placed so that when the child sits down, his upper leg and lower leg will make a right angle at the knee. If you have adjustable seats you can fix them to suit the pupil all right. With the desk certain things must be taken into consideration; it must not be too high; because if it is too high, then the child in order to write has to elevate his elbow and shoulder blade and he is liable to create curvature of the spine. If too low, they lean over their desks and this forces a contraction. Then they should not be too far from the seat for the same reason; not too near, for it may press too hard against them. I do not think that the proper desk has yet been constructed The desks are too flat and the children see the letters obliquely and as a result there is an eye strain.

With regard to the eyes of the children. Children to-day can draw a vertical line, but can a child judge a slant at 45 degrees? No. Here the child sits at his desk, and as my book is placed here on this desk I think a child could not help but get a distorted vision. Whatever can be done to remedy the conditions as they exist, I believe it is the duty of the health officer to see that it is done. Upon you chiefly lies the physical welfare of the boys and girls of the state and we all believe that health should come before education. I would insist that the hygienic conditions of a schoolroom should be thoroughly considered before the consideration of a school teacher, because what profiteth the child if he gains the whole world with knowledge and yet loseth his life?

CONTAGIOUS DISEASES IN THE SCHOOL.

By J. W. Copeland, M. D.

That the public schools are a prolific cause of the spread of contagious diseases there can be no question; and it is probably equally true that nothing interferes more with their success than an epidemic of the more serious of these diseases. When we consider the baneful effects of these disorders, during the acute stage, or as sequelæ, their prevalence becomes a very serious matter. While the law compels the young to attend school, it is the duty of all, and more particularly of us as health officers, to protect them in every manner possible from all dangerous diseases. We should at all times be quick to detect, correctly, any indication of an outbreak and to take prompt measures to suppress it at once. Probably the health officer is called upon oftener to diagnose some of the contagious diseases than for any other purpose, unless it be the establishment of quarantine. Then it follows that he should be so well equipped that his mistakes shall be few and far be-

Digitized by Google

tween. It was once stated here that the health officer should never make a mistake in diagnosing contagious diseases, but, considering the fallibility of human judgment, that is more than could always be expected; but certainly we ought never to make a mistake through ignorance.

Oftentimes we hear people say that all children ought to have measles and whooping cough. So they had, provided they could be guaranteed a perfect recovery. The masses have but little idea of the serious results that frequently occur from an attack of these diseases. Among frail and poorly nourished infants, fatal cases are frequent; especially is this true of whooping cough. This disease during the first year of life is considered by some authorities the most fatal of all the diseases of childhood. It is stated that in England there are yearly 5,000 deaths to the million. Probably in this country the percentage of deaths would not nearly equal that, as children here largely live under better sanitary conditions and are better fed. In this country, in children's hospitals, the death rate from measles has been as high as 35 per cent; but this excessive mortality was largely due to the poor physical condition of the victims. It is true that in our rural communities the mortality from these diseases is rarely large, but the danger of serious results is always present. It is common to see cases of measles attended by a dangerous bronchitis, or broncho-pneumonia and occasionally by cerebral meningitis, and, as sequelæ, chronic catarrhal pneumonia, chronic bronchitis, tuberculosis, and injured vision. So, with whooping cough, bronchitis, broncho-pneumonia, and convulsions often complicate and prove fatal. When we consider the complications that so often attend these diseases, the sequelæ, and the death rate, it becomes a very serious matter to unnecessarily expose a child to any of them. The public is well informed as to the danger resulting from scarlet fever and diphtheria and almost without exception takes every precaution to avoid them.

Without doubt the responsibility for an outbreak of contagious disease sometimes rests more with the attending physician than with the health officer. Suspicious cases may not be promptly reported, or an error in diagnosis may be made. Not long since I read of a mistake being made by a physician who pronounced the rash of scarlet fever some harmless disorder. No quarantine was established, and as a result there were some forty cases of the disease, resulting in closing the schools and materially interfering with business. What the result was as to fatalities, or ruined health, I know not, but without doubt there were some serious consequences. In all cases where there is the least doubt as to the identity of the disease the health officer or other competent authority should be called, and if there is still doubt, the case should be quarantined, also the family, in case one of the more serious diseases is suspected, and the quarantine maintained until an accurate diagnosis is made.

I have found the suppression of some of these diseases a difficult problem, particularly measles and whooping cough. The difficulty here is that, if the child is of school age, and is in the prodromal stage of measles, it attends school as long as able, or until the eruption appears, thus exposing the

Digitized by Google

whole school. The same is true of whooping cough; the child often attends school until it gives the "whoop," and the result is wholesale exposure. In Lyndon, last January, we had a few cases of measles occurring in children not of school age. There was no difficulty in preventing the spread of the disease from these cases. At this time measles was prevalent in towns in our vicinity, and soon the disease appeared among the school children of Lyndonville. From that time it spread with rapidity through the town, so that from January, the present year, to the middle of May there were about 200 cases. My experience with whooping cough was practically the same. As long as the school children were not affected there was no great difficulty in keeping the number of cases within reasonable limits, but as soon as it got a footing in the schools it was a hopeless task to prevent an epidemic. From August, 1905, to the middle of May, 1906, there were about ninety cases.

Children frequently attend school with a mild sore throat but with diphtheritic germs present, or after an attack of diphtheria are allowed to return to school before the disappearance of the germs from the throat, the result being the spread of the infection. The same is true of scarlet fever, by the return to the school without the clothing being properly disinfected, or before the desquamative process is completed. Other diseases more or less infectious and dangerous frequently appear in the school, among which are chicken-pox, mumps, tuberculosis, trachoma, purulent conjunctivitis, purulent discharges from the nose and ears.

The school being such a prolific source for the spread of contagious diseases, what can be done to lessen the danger of epidemics?

The public needs to be better informed as to the symptoms, and the danger resulting from an attack of the contagious diseases, particularly of measles and whooping cough. There is certainly a great deal of carelessness manifested by some in regard to these diseases. Children are allowed to run at large and attend school when the parents must have reason to suppose that they are in the first stages of these disorders. Others do the same through ignorance. Some take no precaution against their children contracting these diseases, believing, as before stated, that they ought to have them. It is the ignorant and least informed that fail to observe care toward the spread of these disorders. The intelligent and well informed, as a rule, are diligent to protect the public from danger of contagion, and report their suspicious cases early.

Those desiring to teach in the public schools, should be required to thoroughly inform themselves as to the prodromal symptoms of all contagious diseases that are liable to appear in the school. They should carefully examine every case of apparent illness that occurs, and if in their opinion the symptoms present are suspicious, they should send the child home at once with a note to the parents requesting them to call their physician, or the health officer, if he be a physician, and determine if anything dangerous to the school is present. They should without delay send home those complaining of sore throat, those taken with vomiting or having a rash of any

Digitized by Google

kind. If teachers were well informed concerning the symptoms of the contagious diseases, and would take an interest in early detecting dangerous symptoms, it would seem that quite an advance would be made toward suppressing epidemics.

Frequent inspection of schools by the health officer or other competent authority ought to result in much benefit. If thorough inspections were made, cases of disease dangerous to the attendants would without doubt often be discovered. Some cases of the acute contagious diseases might be detected as well as chronic contagious diseases, including tuberculosis, diseases of the eyes, nose and ears, and contagious skin diseases. The officer making the inspection should have authority to order home any case, in his opinion dangerous, there to remain until the danger period was past. It is to be hoped that in the near future periodical school inspection will be in effect in this state.

With medical inspection of schools and the coöperation of intelligent and well-informed teachers, respecting these diseases, and a wider dissemination of knowledge for the benefit of the general public, much ought to be accomplished toward their suppression.

DISCUSSION.

J. W. Noyes, West Burke.

The subject of school hygiene is an important one, and merits our careful consideration. We all know that the sanitary condition of our country schoolhouses is far from perfection. Conditions are found there which would not be tolerated in the humblest home. The mode of heating and ventilation is the same as it was half a century ago, with this exception, that then the ventilation was better, for the houses were not built as closely as now. Some one has said: "Give us houses of straw, we have constitutions of oak; give us houses of oak, we have constitutions of straw." This is true unless ventilation is provided for.

The lighting should be carefully considered. There are many schoolhouses to-day in which the pupils are compelled to sit with windows directly in front of them. The main supply of light should enter from the left of the pupil. The windows should be as high as possible. The walls and ceilings should be of a color restful to the eye, of a light bluish or greenish gray.

The most practical system of heating and ventilation for the small country schools is, in my estimation, that recommended by our State Board, known as the jacketed stove. I would earnestly recommend a careful consideration of this system by our school boards. It is not expensive and will insure warmth and pure air. The temperature of the schoolroom should not be kept above 65 degrees.

One of the greatest problems which confronts us is the school outhouse. They are in the majority of cases a menace to the physical and moral health of our children. This can be remedied only by an energetic effort on the

Digitized by Google

part of the teacher, school board and health officers. The teacher should be instructed to use her utmost effort to abolish the indecent writing usually found in these school outhouses. The outbuildings should be located at a distance from the schoolhouse and should be of two compartments, one for each sex, separated by a tight board fence at least six feet high. The vault or box should be so constructed as to keep out all water. A quantity of dry loam, or road dust, should be procured during the summer and enough thrown into the vault every morning during the school session to absorb all liquid and cover the excreta of the preceding day. The vault should be cleaned out at least once a month. If it is possible, running water should be brought to every schoolhouse and each pupil should be asked to bring his own drinking cup, and also towel and soap. Habits of neatness can be easily cultivated in the public schools.

Finally, a word to my brother health officers. This Health Officers' School is an innovation in the advancement of hygienic and sanitary science, and I believe it will be the source of much good. The result rests with us as health officers. This school is supported by the public. We are paid for attending it by the public, and we are defrauding the public if we do not endeavor to put into practice the principles of hygiene and sanitation taught here by men of world-wide reputation. If we one and all do our best the result will be of great benefit to the State of Vermont.

Dr. H. A. Elliott.

We have listened with a great deal of interest to the paper of Dr. Copeland and what I have to say will be supplementary thereto rather than a discussion thereof.

When our secretary asked me to assist in the discussion of this paper (Contagious Diseases in the School) he struck a sympathetic chord in my nature and experience. I have always been interested in anything pertaining to our public school system, and since receiving appointment to that important commission of health officer, eight years ago, that interest has grown, for my first duty in the capacity of such office was to make a sanitary survey of all the school buildings in the town, under direction of the State Board of Health, and in so doing I necessarily made the acquaintance of officers, teachers, and pupils. Such relation has been fostered, until I have become acquainted so intimately with school officials and the public in general that I received one vote for school director at last March meeting. You see how popular the exponent of sanitation is in Barnet!

I am pleased to see that the consideration of the school has received first place upon the program for the Health Officers' School this year, which I believe is the expression of excellent judgment on the part of the Board. The public school's welfare is of vital importance; it is the only hope of successful and proper education of any nation, because here the masses of children who never see the walls of academies must imbibe whatever of education falls to their lot. And not only in the text-books, but here, if ever, they must receive instruction in the laws of sanitation, prevention of

Digitized by Google

disease, morality and good citizenship; and upon the health and character of the individual citizen depends the strength of the nation.

Contagious diseases in the school are a menace to the success and prosperity of the school, and therefore should be prevented if possible. The transmission of such diseases is a subject hard to be understood, the results of them are very easy to recognize. Obviously they injure the educational standard, the life and health of pupils, teachers and the community wherever the unbidden visitor may alight, and, moreover, a great financial loss to the town so afflicted is incurred. We find by analysis of statistics of my town that the cost of maintaining our schools, 15 in number, last year was $5,139.73; number of pupils, 289; number of weeks lost, 543 through non-attendance, making a total loss to the town of $314.95, or nearly $1 to every $16 expended. We are charitable enough to believe that this non-attendance was due to disease and that largely in the contagious class. Since March 1 there have been reported to me 30 cases of measles, 20 of varicella, six of pertussis, seven of rubella, one of typhoid, besides countless numbers of la grippe, tonsilitis, impetigo contagiosa not reported. One school having normally 15 pupils was reduced to four and for one or two days only two in attendance. These statistics are not included in financial loss mentioned above.

Contagion among children of school age is transmitted through the medium of school books belonging to the town. A book is used by a child who spits and slobbers saliva and mucous, laden with some of the germ diseases named, upon its pages during the whole term; then this same book is handed to your child or mine the next term without fumigation. This is unsanitary and indecent, and can be remedied by the State Board of Health. Some schools are furnished with pencils and are transmitters the same as books and need the same treatment. Another potent carrier of contagion is candy and chewing gum—swapping "cuds" of gum and exchanging "sucks" of the "candy sucker." I wish to mention also another fruitful source of contagion among children of school age, that is, secondary attacks, so-called. When the health officer goes to quarantine the family he is often informed by the parents that one of the older ones had that disease when a baby, and the health officer under present laws has no jurisdiction over that child as regards quarantine in modified form; consequently in about a week said child comes down with an attack of measles, or whatever it may be, after afflicting all in its wake with the contagion. Now, we are not denying the existence of secondary attacks of measles and some other diseases, but they are *very rare*. But here is what I say regarding this matter: Parents *do* forget from one epidemic in one batch of children to another in another group, and so the damage is done; this is of great importance to the family, schools and churches in that neighborhood, and therefore we would suggest the following means of obviating this phase of contagion, viz.: Let the head of every family keep a family record of vital statistics in the grand old family Bible, and furthermore urge upon him the importance—the tenfold greater importance to his family, neighbors, schools, churches, and

Digitized by Google

society in general—of keeping an accurate record, alongside of the other, of all contagious diseases afflicting that family since its inception, giving dates, degree of severity, duration and mode of termination of each disease. By the hearty coöperation of each parent in this state in keeping such a record, a service of great value will be rendered to the cause of prevention of contagious disease in the school. I would recommend that each health officer advise it in his report next March meeting.

I believe that influenza could be largely prevented by sterilizing the throats as well as the posterior nares of all children, for here is the point of entrance into one's system of the germ of this disease. If a cabinet could be constructed in such a manner that the child could enter it and have his throat and nasal cavities rendered sterile in about one minute just previous to entering the schoolroom, and again just previous to leaving it, without danger to the child, it would be a panacea and a preventive of this disease, and possibly of the whole list. A chance for some good brother with originality and inventive genius to make himself the benefactor of the public school, and have his name deservedly placed in the hall of fame. However, until such invention comes into practical application, the health officer must use all his skill to prevent contagious diseases in the school. Often he must fight single handed and many times will fail. He needs the hearty, zealous coöperation of town officers, teachers, parents, guardians and pupils in this matter, and until such assistance comes the health officer might as well try to sterilize the Atlantic ocean with a drachm of carbolic acid. We must have laws and obedience to them; the dignity of the law must be preserved at any cost. But most of all we must have education of the people, directors, and teachers along the lines of sanitation and hygiene of the public school in order to become successful in suppressing this evil of contagious disease.

Dr. Joseph Breitling, Lunenburg.

I think the points brought out by Dr. Elliott are excellent. It has been my fortune or misfortune to be a member of the school board as well as health officer.

I have always felt if the teachers knew the initial symptoms of the exanthemata a great deal might be accomplished to prevent the spread of contagious diseases.

We should instruct the teachers in regard to these early symptoms. The initial coryza of measles and the throat symptoms of scarlet fever and diphtheria are points to be brought to their notice. Every suspicious case should be reported by the teacher both to the health officer and the family. Suspected cases of diphtheria should be temporarily quarantined until a report can be obtained from the Laboratory of Hygiene of the culture examination which should be always made.

Cases of measles and whooping cough which come under modified quaran tine regulations should not be too early discharged from such quarantine.

Every schoolhouse should have a responsible janitor. It is better to employ an adult in all cases. A man to do a man's work. And right here I

Digitized by Google

wish to enter an emphatic protest against dry sweeping. The schoolroom should be thoroughly swept at least twice weekly. Have the janitor use a 4 per cent solution of formaldehyde with which to sprinkle the floor.

Another thing in regard to prophylaxis. The time-honored tin dipper I believe to be a source of carrying infection. Every child attending school should have his or her own separate drinking glass and should be made to use it and none other.

With regard to the closets. Why is n't it economy to have the best? Where there is running water in or near the schoolhouse there is no reason why flush closets cannot be installed. We should aim to obtain the best results possible, with the means at our disposal, in regard to all hygienic measures.

Finally those who may imagine the joint office of health officer and school director to be a bed of roses would quickly find upon drawing the draperies of their couch about them for pleasant dreams that the thorns lie uppermost.

Dr. C. S. Caverly, Rutland.

This is one of the most important subjects we shall discuss at this school. If you will examine carefully disease and death statistics, as kept by months, you will find that the rate of most of the exanthematous diseases, and I may say most of the infectious children's diseases, follow a curve which points very directly to school influence. This curve, you will find, generally rises after school begins in the fall and again in the winter and spring, and is at its lowest points during the vacation.

There is no possible doubt but that the spread of these diseases is very largely due to school contagion. Possibly diphtheria and scarlet fever are not spread as often now as formerly. I think Dr. Jacobi, in his treatise on diphtheria, mentions an outbreak of that disease in the little town of Newark, Vt., in which a whole school was infected with the disease by the premature return of a convalescent case. Such occurrences are not as frequent, I feel sure, of late as twenty years ago. Scarlet fever is probably spread through the schools oftener than diphtheria, but not as often as formerly.

The two diseases of which I wish especially to speak at this time are measles and whooping cough. We see wholesale outbreaks of these two diseases constantly occurring, in which the distribution point is the schoolroom. Waves of these diseases pass over our state, and we, as health officers and physicians, stand by almost helpless to control or exert much influence on their spread. The control of these two diseases is one of the most perplexing problems in preventive medicine, and the schoolroom holds the key to the situation. One gentlemen in discussing this paper said he had good control of measles until the disease got into the school and then it was a hopeless task.

How can these diseases be controlled as far as school distribution is concerned? There are two ways of doing this: First, have teachers and

Digitized by Google

parents educated with regard to the dangers of these diseases and the methods of their spread; second, make an ironclad rule that no child with a COUGH, and no case of coryza, shall be allowed in the schoolroom. I believe that almost all coughs are contagious. There may possibly be a nervous cough in children that is not dependent on any infection, but I think the general rule should hold that every cough and every coryza should be excluded from the schoolroom. In that way you will be able to do something toward controlling these two diseases, and I may say others as well.

Measles is impossible to diagnose at the start, while it is very contagious. Koplik's spots on the mucous membrane of the mouth are not discoverable until the danger is done. The incubation period is twelve to fourteen days, and during that time a child can travel a long distance. A child comes from Chicago or New York and enters school; this child may have a little sneezing, conjunctival irritation, or cough, but those symptoms are so common in the schoolroom that they attract no attention. After a few days of these symptoms the child becomes sicker and the doctor is called in and discovers measles. Meantime the danger has been done and perhaps 50 or 75 per cent of the children in that room have been exposed and will develop the disease.

The situation with regard to whooping cough is not very different. There is no doctor in the world who can diagnose this disease early, and it probably is contagious in its earliest stages. You congregate twenty-five to fifty children in a limited air space and, in a great majority of cases, in foul air, and I can imagine no better gaseous culture bed for the infectious matter, whether germs or something else, of whooping cough and measles. If we were attempting to devise means to promote the spread of these diseases, I can think of no better plan. You place those of a susceptible age under the most favorable surroundings to acquire these diseases. So I say, the key to the prevention of measles and whooping cough is the schoolroom. These two diseases are regularly causing more deaths than either scarlet fever or diphtheria, not only in Vermont, but elsewhere.

It is certainly an old fogy notion that it is a part of the child's education that these diseases should be had and over with. Teachers and parents alike should learn these things and the school boards should back up their teachers in taking energetic measures to exclude coughs and colds from the schoolroom.

Mr. S. W. Butterfield, Weathersfield.

I wish to say that I was a member of the Legislature of 1902, when this school law was passed giving to the charge of the health officer matters pertaining to schoolhouses, etc. Here was a law putting matters relating to schoolhouses which properly belonged to the school directors into the hands of a third party, and I looked on with doubts as to its desirability. After I began to look over the schoolhouses and school premises, I was convinced that these men who framed this law were right and knew the wherefore of their acts.

Digitized by Google

Now, gentlemen and brother health officers, you don't want to be afraid to put your noses in some of these places. In speaking of the outbuildings connected with the country schoolhouses, I would say in my town I went over those buildings pretty thoroughly. In District No. 1, I did not go through the schoolhouse until school was over, as I wished to make a thorough examination of the premises. I went there after the school had been closed a week, and when I threw open the door from the schoolroom into the shed, the stench that came through from the closets was terrible. I brought that matter before the town. We have had two or three men as directors, who have been running these things for years, and this last year we put in a new director who has thoroughly altered the outbuildings in District No. 1. You men here are probably all conversant with the outbuildings attached to the country schoolhouse. Pictures and writing, degrading the minds of the children of the state, are found in almost every outhouse. In the outhouse in District No. 1, above referred to, we had the boards which were defaced removed and new ones put in, and the entire interior of the outbuilding whitewashed and disinfected, and it is to-day a fit place for any child to use. In one district I asked a man how long those outhouses had been in such a condition without cleaning. He said, "I have lived here twenty years, and I never knew it to be done." I have found many that have run ten years without cleaning, but this is the only one that had run twenty. Now, what are you going to do about it? I cannot interest two or three of those old men who have been running the school matters there for years. Now, shall I go on and clean them out myself? I am a beginner in this business and would like to know my duty. I don't know whether it is best for me to try to run all these things or not. They are placing a good many things on the health officer to-day.

With regard to ventilation; this is a subject which we are all interested in. In my younger days I was a schoolmaster and boarded around the district. The light comes in from two or three sides in almost all of the buildings in my town, and Superintendent Stone said the best way of ventilating such a building was by lowering the windows on opposite sides of the building and letting the fresh air come in and mix with the hot air inside. That is all right, but he also said in new buildings which were to be erected nowadays, we should have windows only on one side. Now, the way the pupils are seated boys on one side and the girls on the other, don't you think that a boy sitting all the year round with the light coming in one direction will have his eyesight interfered with? I think the girls and boys should have their seats changed every term so as to have the strong light hit different pupils. If I were to sit there with that light coming in on one side for ten years, I know that it would affect my eyesight. Thirty-three per cent of the children's eyes are defective, and I lay that fact to the light coming from one side all the time. I should equalize that by having the boys sit on one side one term and the girls the next term and so on. The ventilation in most of the buildings is the same to-day as it was twenty years ago. In one

Digitized by Google

schoolhouse in my town they have opened a ventilator in the schoolroom at the bottom of a chimney and another at the top.

I am glad to say that the health officer is educating himself along broader lines and is doing all he can to protect the lives of the children of the state. The only thing is, I think, the work is being pushed too heavily upon his shoulders.

Dr. J. W. Jackson, Barre.

Speaking of the conditions as Dr. Clark has pictured them, I must say that I can hardly agree with this idea of lack of physical culture. I know that physical culture did me lots of good in my early days. I was a hollow-chested lad and I devoted fifteen or twenty minutes a day to physical exercise and it certainly made me a stronger man. Dr. Clark said that it seems as though the standard of mental capacity was being raised and physical standard lowered. In my city for the last three or four years the superintendent of our schools and the school board have been neglecting one of the most important features of school work. Perhaps because the superintendent does not care much about physical culture himself. We all know that a growing child cannot stand too much physical culture, but he ought to have fifteen minutes twice a day of physical culture, and it would not hurt him a bit.

With a birth rate of 280 to 304 a year in a small city—Barre—it means that we have got to do something in the way of schoolhouses. The schoolhouses are all right in the cities; they are living up to the regulations laid down by the State Board of Health, and *our* school buildings are very good—the best in the state. I think that the state superintendent of education, in conjunction with the State Board of Health, should lay down certain rules or regulations, which should be passed on to the school directors, regarding the exercise necessary for each child, the condition of the outbuildings, and the arrangement of the schoolhouses themselves, and if they did not regard those rules, the health officer should see that they were carried out.

As Governor Bell said last night, the older population of Vermont thought that what was good enough for them was good enough for their children. As health officer I have often been called in by some school teacher, and the conditions as they have been brought before you to-day by the various speakers have not been exaggerated at all. The majority of school directors are so shiftless that they will not take care of their buildings. I think that a set of rules or suggestions should be made out and the health officer should have some authority in the matter, which would at least give them something to think about. We all know that it takes a long time to get things started, but by pegging at it we will soon get everything we want brought into shape and thus be a great blessing to the rising generation.

Another matter which we as health officers will need to be watchful over is the private slaughter house and the quality of meats handled by the same, and in this matter the members of our organization in the rural communities can be of much service, if they will, as they have an opportunity to know

Digitized by Google

many times whether a sick animal is killed and sent to the city to be peddled out or whether it is killed and buried as it should be. I am satisfied that much of the meat killed and peddled in the city of Barre is unfit for eating and would not pass a careful inspection.

Dr. E. S. Allbee, Bellows Falls.

I should like to say a word regarding the raising of school standards: I don't believe a child should be allowed to enter school until he is at least seven years old, and at that age he will be old enough to apply himself and learn to study intelligently. Now we see children starting off to school at four. What do they go for? To learn to play.

Superintendent Stone is opposed to the single session. I must say I do not agree with what he said there. With two sessions daily, say from nine to four or four thirty, a child has no time for any exercise, either before or after the close of the school. The school year takes in the shortest days of the year, and from November to May the days are very short. A child has just time in the morning to get his breakfast and prepare himself properly for school, and when he returns at night it is generally candle-light time. Consequently, I think a single session advantageous, as the child has all the afternoon for play and for fresh air.

As far as crowding children, I would say that the parents are more to blame than the school directors or anybody else. We have too much outside society for school children. The children must attend this sociable or that, they must go to this musical, or to this party or that, when they should be put to bed. I think, if we see that this outside work (for it certainly is just as trying on the mental and physical development of a child as study) is cut entirely out and that our children are in bed at nine o'clock, we will not have any more trouble about crowding in the schools. Let the children have their exercise. Let them go to a dance or a party or skating on Friday or Saturday nights and rest during the other nights, and you will find that your school boards and directors are not raising the standards any more than they should to keep up with the entire country.

E. A. Graves, Sunderland.

We are building a new schoolhouse, and I was asked as health officer to correspond with the state superintendent of education with regard to the heating and ventilation. Superintendent Stone sent the recommendations of the State Board of Health, and I gave these recommendations to the school committee. They did not regard these recommendations at all, but went ahead and built their schoolhouse on the plans of the old one, for they said they went to school in the old one and it was healthy enough for the rising generation. Now, what is my remedy as health officer in this matter?

Dr. H. D. Holton, Brattleboro.

Mr. Graves, you will find that Section 10 of Acts of 1904, relating to public health, is very plain:—

Digitized by Google

"The State Board of Health shall, as often as it judges to be necessary, issue to the local boards of health its regulations as to the lighting, heating and ventilation of schoolhouses, and shall cause sanitary inspection to be made of churches, schoolhouses and all places of public resort, and make such regulations concerning the same as it shall deem necessary for the safety of persons who may attend schools or services therein or resort thereto. And all schoolhouses, churches and public buildings hereafter erected shall conform to the regulations of said State Board of Health in respect to all sanitary conditions, including fire escapes, necessary for the public health, and for the safety and security of individuals in such public buildings, and all persons, corporations or committees intending to erect any public building herein named shall submit plans thereof so far as to show the method of heating, plumbing, ventilation and sanitary arrangements to the health officer, and procure his approval thereof or the approval of the State Board of Health before erecting said building, and shall conform strictly to all requirements of said Board in the respect aforesaid, and any person, corporation or committee who shall erect any such schoolhouse, church or public building, without such approval and without complying with such regulations, shall on conviction thereof pay a fine to the treasurer of the state of not less than one hundred dollars and not more than five hundred dollars and shall make said building conform to the sanitary regulations of said Board before the same shall be used, otherwise said building shall be deemed a nuisance, and be put in proper condition by the health officer under the direction of the State Board of Health, at the expense of the owner."

These plans were submitted to Mr. Graves; he made the suggestion that they were proper and should be followed out; but they were not. This section tells you pretty clearly what it is your duty to do, and I should read that section to the directors when I got home and ask them what they wanted to do about the matter. You health officers are a part of the local boards of health. It is the selectmen of a town, or the committee on health of a city, with the health officer, that makes the local board of health. You should get your local board of health together and say such and such questions are coming up, and ask them if they are willing to have it recorded that you are to act for them or not. If they do not care to have you act for them in such matters, it is obligatory that you call the full board for every act relating to the abating of a nuisance,. etc. Section 5 of Section 15 reads as follows:—

"Any health officer or member of a local board of health, who shall refuse or neglect to perform the duties imposed upon him by this act, shall on conviction thereof pay to the treasurer of the state a fine of not less than five dollars nor more than one hundred dollars, and costs of prosecution."

I don't think many of the local boards of health know that. A year ago I was called to a town where the health officer was advised not to say anything regarding some smallpox. They thought it was n't necessary to do anything regarding it and did not want the health officer to notify the

Digitized by Google

State Board of Health. I went up there and said, "Now, you gentlemen want this thing done in the proper way," and I read that section of the law to them, and there was n't a word said against doing our duty after that.

With regard to ventilation of a schoolhouse: The window space should be at least one fourth of the floor space. There must be no more space between the top of the window and the ceiling than is required to finish the building, and the window sill must be four feet from the floor. The light must be arranged so as to fall upon the pupil from the left or left and back, never from the front. Each pupil should have at least twenty square feet of surface area, and from 200 to 300 cubic feet of air space.

The superintendent has given you an excellent address. You should all profit by the remarks which he has made. With regard to the jacketed stove, I would say that it is the simplest and best way to ventilate a one-room building.

The outbuildings are a great outrage against the morals of the boys and girls in this state. There is nothing so degrading as the outhouses in some of our communities. In the first place, outbuildings should not be connected with the building proper; they should be twenty feet away. You can have a covered way built from the main building to these outbuildings, so they can be used in rainy, snowy or cold weather. They should be properly looked after. You health officers should say, I am going to instruct you teachers with regard to the care of the buildings. I would suggest that the superintendents read a few rules relating to hygiene of the school. I am sure if you could get the boys to feel that the schoolhouses belonged to their fathers, they would be more careful in defacing the same. The boys and girls think the schoolhouses belong to no one in particular and they can do just about as they have a mind to. Number 44, Laws of 1904, an act relating to school buildings, was enacted without the knowledge of the State Board of Health. Some one who was conversant with the matter saw the propriety of it and introduced it, and it became a law. We have not been around the state condemning school buildings, else we would have done nothing else. We have looked over a good many and condemned some. We recommended a school building at Enosburg Falls and they have donated $25,000 for a new building. You all have the power in your own towns to govern the school building question. The State Board of Health mean to be just, prudent, and careful with all the powers that are given them; we mean to pursue an even, steady, honest course, and we ask you all to try to do the same.

F. H. Dunsmore, M. D., St. Albans Town.

Superintendent Stone stated that the system of ventilation which he would recommend was the lowering of the windows on opposite sides at the top. I think when he was speaking of the building of a suitable schoolhouse, that he made the statement that he should advise windows on one side only. Now how is he going to explain this difference?

Digitized by Google

M. S. Stone, Superintendent of Education.

When I spoke of lowering the windows on opposite sides of the room, I spoke of the conditions as they exist to-day in the majority of schoolhouses, but if a new building is going to be constructed, we should expect some new system of ventilation would be inaugurated in accordance with the instructions given by the State Board of Health.

Dr. F. E. Clark, Burlington.

Mr. President, ladies and gentlemen:—I wish to add my appreciation of the very excellent address which Mr. Stone has just given us. He has touched upon the most valuable points of schoolhouse sanitation and no doubt has given all of us new thoughts and ideas as to the modern method of schoolhouse construction.

There are, however, a few things which suggested themselves to me while I listened to this valuable paper: First, it seems to me that we as health officers should be ever watchful not only to improve the conditions and arrangements of the school building, but not to lose sight of the proper care or janitoring of the same. Unclean schoolrooms and old and soiled schoolbooks are the most fruitful sources of contagious disease. Right here in our own city, where we pride ourselves on having the latest improvements in schoolhouse sanitation, and properly constructed buildings, I discovered this fact, that Friday night, or after the weekly session of school, the buildings would be swept, possibly dusted or not dusted, and the curtains or shutters drawn, excluding all light and sunshine as well as fresh air, and they were left that way until Monday morning. It is right here that I think the caretakers or janitors should be instructed to raise the curtains and let in a flood of sunlight and also fresh air for this intermission when the schoolroom is not in use. It is nature's most effective method of deodorization and fumigation. However well our school buildings may be cared for there is no one thing that can be done which is conducive to good health of the children more than by allowing a flood of light into these rooms when they are not occupied. In addition to this, I would suggest that the janitor give the floor a good liberal sprinkling with a solution of formaldehyde and water of equal parts at least once a week, say on Friday or Saturday, after the weekly cleaning, that it may have some additional benefit so far as disease germs which may be resting upon the floor are concerned.

Second, with regard to the outhouse and care of the same, a subject which is of vital importance to us all, I would like to know if this experiment has not been tried; have a cast iron vault with a flue connected with the same and once a day have everything burned. This flue will carry off the refuse and act as a ventilator for the same. There is, I believe, a method of incineration, which is employed in some towns and cities where there is no public sewer. There is manufactured an incinerating closet which can be placed in any house, connecting the flue with the chimney, and is used

Digitized by Google

where there is no sewer connection or the possibility of constructing a cesspool. To my mind, there need be no outhouses to our country schools, but the closets could be made a part of the regular building and the incinerating method be employed. This, I believe, solves this one all-important question which is before us.

Third, while we are instructed as to the best means of constructing a school building, its ventilation, its heating, and the care of the same, we as physicians should certainly give some advice to superintendents and school boards who are constantly and persistently raising the standards. I have often said that if ever I had an opportunity I should speak my mind against this insane desire to raise the standard and to increase the work, especially in the primary and intermediate grades. We have not to look back very far and find that some of the brightest men in this country, coming from the farm, brawny and sunburnt, had only fifteen or twenty weeks' schooling in the whole year. These men were not crowded in the primary grades with work which was beyond their strength. Now this is a serious question, and to me very important. I have two children who are in school and I am interested in their work, but also in their physical development. While my children are healthy and as strong as the average child, I am quite sure there is a great deal of work demanded of them which is beyond their strength and requires too close application. You may give a child a good building, plenty of playground, his adjustable desk and all those things that go to make up a properly equipped building, and then go to work and crowd the brain faster than it can develop, and you are doing more to ruin the health of that child than you are to advance his mental ability. You produce in that child a sort of mental indigestion. His brain develops at the expense of his body and sooner or later both will break down. I thoroughly believe that we have gone too far in raising the standards of the higher grades, and especially in our colleges. If our college course were a three years' course instead of four, I believe it would be a step in the right direction. I do not believe that any child should be admitted to a high school until he or she had reached the age of sixteen years. This would give more time in the primary and grammar grades; the child would not be crowded; and we would be doing a great deal towards maintaining an even balance between a developing brain and a developing body. I believe that no boy or girl should graduate from a high school or enter college that has not attained the age of twenty. No brain can do the work that is required in our college courses to-day that has a weak or overworked body to carry the same. I trust that you, Mr. Superintendent, while you are faithfully looking after the school buildings, their proper construction and ventilation, their sanitary arrangements, and the care of the same, will also be as untiring in your efforts to adjust the standards to the strength of the average child, to eliminate all non-essentials, caring for the physical development of the child as well as his mental, keeping in mind there is an equilibrium between the two.

Digitized by Google

Hon. M. S. Stone.

We have been looking after certain things and neglecting other things. We have been directing our attention purely to the steady stuffing of the mind and in consequence thereof we have been producing a mental indigestion. But I want to call your attention to the fact that I do believe we are doing better than they did sixty years ago. I wish to give you an example of the progress we have made. In Springfield, Mass., just exactly sixty years ago, an examination was given to the pupils in the high school, the second class. Those papers were discovered last year, and upon looking them over, we found eighty-five had taken the examination in arithmetic, geography and spelling. This year those same questions were given to 267 pupils in the grammar school. Sixty years ago 40 per cent spelled the words correctly; this year 50 per cent spelled the words correctly. Sixty years ago 29 per cent solved the problems correctly; to-day in the grammar school 65 per cent solved the problems correctly.

If we could introduce in the city school manual training and in the country schools agriculture, we are going to do more for the benefit of the child than in any other way. Manual training comes close to the child in the city; his parents are employed at certain industrial work. The child in the country comes from the farm and is acquainted with agriculture; there is the basis to work on. We could give in our city schools a little industrial instruction and thereby lay down the foundation for training. We develop in them the idea of honesty and self-dependence, and the child can discover his own aptitude and ability and then enter upon his life work more decisively than he could if he had no training. The boys and girls coming from the farm should be taught things relating to farm life. Instruct every boy how to raise potatoes and corn and let them keep a record of their crops. We could have the boys and girls cultivate a small area of land and then give a prize to the one who will raise the best hill of corn, or the best bushel of potatoes, or the best calf, and instead of having our county fairs, let us have a school fair, and let the boys and girls make an exhibit of their industry. Give a prize to the girl who makes the best loaf of bread, and in this way you are going to do more for the children of this state.

Digitized by Google

MILK TEST.

STANDARD MILK.

Lab. No.	Place of Sale.	Name of Seller.	Total Solids.	Fat.	Solids Not Fat.	Microscopically.
40894	Rockingham	S. W. Kendall	13.31	4.2	9.1	Normal
40995	"	H. Whitten	12.81	4.0	8.8	"
41008	Bennington	A. A. Elwell	12 70	3.7	9.0	"
41084	Rockingham	Fisher	13.32	4.0	9.3	"
41085	"	Taylor	13.30	4.0	9.3	"
41109	Windsor	Janes	14.63	5.3	9.3	"
41110	"	Forbes	15.44	4.6	10.6	"
41111	Hartford	W. H. Contermarsh	13.76	5.0	8.7	"
41114	"	P. J. O'Conner	13.28	4.6	8.7	"
41457	Rockingham	Stevens	13.30	4.4	8.9	"
41461	"	"	13.17	4.2	9.0	"
41466	"	"	13.27	4.8	8.5	"
41467	"	"	15.78	6 4	9.3	"
41468	"	"	15.96	6.6	9.3	"
41500	Putney	W. E. Pierce	12 44	3.9	8.5	"
41502	"	"	12.56	4.0	8.6	"
41621	Rockingham	Rice	13.28	4.3	9.0	"
41622	"	"	13.05	4.2	8.8	"
41623	"	"	14.52	5.0	9.5	"
42177	St. Albans	L. D. Smith	12.50	4.0	8.5	"
42445	Burlington	H. H. Wheeler	13.04	4.4	8.6	"
42465	.....	Private dairy	13.80	4.4	9.4	"
42466	.....	" "	13.80	4.4	9.4	"
42547	Bennington	A. O. Jennings	15.00	6.5	8.5	"
42818	Montpelier	*	12.33	3.5	8.8	"
43226	"	Geo. O. Hall	13.42	4.4	9.0	"
43227	"	Geo. Campbell	14.01	5.2	8.8	"
43231	"	Sabin Farm	13.68	4.6	9.0	"
43250	"	Meadow Brook Farm	13.05	4.2	8.8	"
43253	"	F. R. Hayden	14.02	5.0	9.0	"
43256	"	Bliss Bros.	14.13	5.2	8.9	"
43257	"	B. Marvin	14.06	4.4	9.4	"
43980	Danby	R. Stone	14.28	5.8	8.5	"
44181	St. Albans	Z. Campbell	13.31	4.2	9.1	"

* Submitted by consumer. Dealer's name not given.

34

Digitized by Google

MILK THAT DOES NOT COMPLY WITH THE LAW.

Lab No.	Place of Sale.	Name of Seller.	Total Solids.	Fat.	Solids Not Fat.	Microscopically.
40898	Rockingham	Chas. Spaulding	14.76	5.4	9.3	Inflammatory products (pus)
40896	"	David Davidson	11.35	3 2	8.1	Extraneous matter (dirt)
40897	"	Albert Whitten	12.60	3.4	9.2	Extraneous matter (dirt)
40898	"	Dennis Drislands	12.16	4 5	7.6	Extraneous matter (dirt)
40899	"	J. F. Wright	13.76	5.0	8.7	Extraneous matter (dirt)
40900	"	E. E. Green	13.10	3.6	9.5	Extraneous matter (dirt)
40901	"	A. Wright	12.56	4 0	8.5	Extraneous matter (dirt)
40902	"	A. G. Rice	12.81	4.0	8.8	Inflammatory products (streptococci)
40906	"	Allen	13.04	4.4	8.6	Inflammatory products (pus)
40952	Manchester	*.....	11.87	3.4	8.5	Inflammatory products (streptococci)
40953	"	.....	10.72	3 0	7.7	Extraneous matter (dirt) and many bacteria
40969	Windsor	*.....	14.04	4.6	9 4	Extraneous matter (dirt)
41056	.....	Private Dairy	12.43	4.1	8.3	Normal
41086	Rockingham	Jeffreys	12.94	3.9	9 0	Extraneous matter (dirt)
41087	"	Farr	13.02	3.8	9.2	Extraneous matter (dirt)
41112	Hartford	E. M. Labelle	13.76	5.0	8 7	Inflammatory products (pus)
41113	"	D. Moseley	14.25	5.4	8.8	Extraneous matter (dirt)
41115	"	O. O. O'Neal	14.24	5.6	8.6	Inflammatory products (pus)
41116	"	E. B Newton	15.96	7.4	8.6	Extraneous matter (dirt)
41117	"	C. E. Cambridge	13.78	4.8	9.0	Extraneous matter (dirt)
41262	Rockingham	John Thwing	18.04	4.4	8.6	Extraneous matter (dirt)
41263	"	Stevens	18.81	4 2	9.1	Extraneous matter (dirt) and inflammatory products (pus)
41812	Burlington	Baker & Tupper	12.79	4.4	8.4	Extraneous matter (dirt) and inflammatory products (pus)
41458	Rockingham	Stevens	12.69	3.9	8.7	Inflammatory products (pus)
41459	"	"	12.90	4.2	8.7	Inflammatory products (pus) and extraneous matter (dirt)
41460	"	"	11.85	3.2	8 6	Normal
41462	"	"	12.81	4.0	8.8	Inflammatory products (pus)
41463	"	"	15.00	6.2	8.8	Inflammatory products (pus)
41464	"	"	13.76	5.0	8.7	Inflammatory products (pus)
41465	"	"	14.76	5.4	9.3	Inflammatory products (pus)
41501	Putney	Pierce	12.56	4 0	8.6	Extraneous matter (dirt)
41619	Rockingham	Rice	14.04	4.6	9.4	Numerous pus cells
41620	"	"	13.55	4.4	9 1	Inflammatory products (pus)
41624	"	"	13.80	4.4	9.4	Inflammatory products (pus)
41625	"	"	13.13	4.0	9.1	Inflammatory products (pus)
41999	Windsor	*.....	11.81	4.0	7.8	Normal
42082	St. Albans	L. D. Smith	12.45	3.6	8.8	Inflammatory products (pus)
42260	Windsor	*.....	12.00	3.0	9.0	Extraneous matter (dirt)
42370	Bellows Falls	*.....	12.91	4.0	8.9	Inflammatory products (pus)
42419	Windsor	Colby	12.66	4 5	8.1	Normal
42446	.....	Private Dairy	.....	....	.....	Inflammatory products (pus and streptococci)
42479	Georgia	A. E. Walker	14.60	5.4	9.2	Extraneous matter (dirt)
42480	"	"	13.42	4.4	9.0	Extraneous matter (dirt)

*Submitted by consumer. Dealer's name not given.

Digitized by Google

MILK THAT DOES NOT COMPLY WITH THE LAW (CONTINUED).

Lab. No.	Place of Sale	Name of Seller.	Total Solids.	Fat.	Solids Not Fat.	Microscopically.
42608	.....	Private Dairy	12.68	4.0	8.7	Inflammatory products (pus)
42671	Montpelier	*.....	14.26	5.2	9.0	Inflammatory products (pus)
42796	E. Wallingford	*.....	9.64	2.6	7.0	Extraneous matter (dirt)
42797	Danbury	*.....	10.92	3.2	7.7	Normal
42798	"	*.....	10.22	3.0	7.2	Normal
42975	Burlington	H. B. Chittenden & Son	.....	.....	.....	.....
43094	Bellows Falls	*.....	.....	.....	.....	Extraneous matter (dirt)
43225	Montpelier	Leland Bros.	13.79	4.6	9.1	Extraneous matter (dirt)
43226	"	Walker Farm	13.30	4.4	8.9	Inflammatory products (pus)
43229	"	W H. Lombard	12.06	3.3	8.7	Extraneous matter (dirt)
43230	"	Langdon Farm	13.20	4.2	9.0	Extraneous matter (dirt)
43242	Hinesburgh	Collins	13.82	4.2	9.6	Extraneous matter (dirt)
43251	Montpelier	B. Marvin	14.02	5.0	9.0	Extraneous matter (dirt)
43253	"	M. D. Hill	13.05	4.2	8.8	Extraneous matter (dirt)
43254	"	F. R. Hayden	14.76	5.2	9.5	Extraneous matter (dirt)
43255	"	W. L. Pearson	13.31	4.2	9.1	Extraneous matter (dirt)
43258	"	J. Pembroke	13.52	4.5	9.0	Inflammatory products (pus)
43259	"	G. R. Lawrence	13.54	4.6	8.9	Extraneous matter (dirt)
43390	Danby	R. Stone	11.52	3.8	7.7	.....
43391	E. Dorset	B. S. Bowen	12.28	4.2	8.1	.....
43392	Manchester	J. J. Squires	11.10	3.3	7.8	.....
43861	Wallingford	A J Bartholomew	15.78	6.0	9.7	Extraneous matter (dirt)
43862	"	H. H. Keech	15.60	6.0	9.6	Extraneous matter (dirt) and inflammatory products (pus)
43896	Manchester	J. J. Squires	12.79	4.3	8.5	Extraneous matter (dirt)
43908	Danby	Chas Mathewson	13.25	4.7	8.5	Extraneous matter (dirt)
44002	Dorset	B. P. Bowen	12.29	4.4	7.9	Normal
44182	St. Albans	I. N. Warner	13.79	4.6	9.1	Extraneous matter (dirt)
44183	"	F. H. Brooks	13.31	4.2	9.1	Extraneous matter (dirt)
44184	"	K McGrath	16.88	8.0	8.8	Extraneous matter (dirt)
44185	"	F O. Jackson	13.31	4.2	9.1	Extraneous matter (dirt)
44186	"	E. Warner	12.45	3.7	8.7	Extraneous matter (dirt)

*Submitted by consumer. Dealer's name not given.

3.12
7.63

MISCELLANEOUS FOODS.

Lab. No.	Article.	Place of Sale.	Manufacturer or Wholesaler.	Remarks.
41907	Maple Syrup	Rutland	Mrs J. C. R. Dorr	Pure
41906	Maple Sugar	"	"	"
43222	Oysters	Montpelier	R. R. Higgins, Boston	No borax
43223	"	"	"	"
43224	"	"	Wheeler & Burnes	"
43022	"	Rutland	Not given	"
43023	"	"	"	"
43360	Olive Oil	Brattleboro	Geo. W. Perkins, Phœnix, Ariz.	Pure
43522	Red Wine	Montpelier	Not given	Not adulterated

Digitized by Google

BULLETIN OF THE

VERMONT STATE BOARD OF HEALTH.

Volume VII. No. 2.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

A National Department of Health. The government is designed for the welfare of the people, and in a government like ours, of the whole people, one of the first considerations in the people's welfare is their health; material resources are secondary. Without an able-bodied race, no country can prosper, and it is the favoring health conditions of the temperate zones that have made the races inhabiting them the rulers of the world. With the artificial conditions of civilization, however, the problem of the public health comes more and more to the front, and the old *laissez faire* methods show their deficiencies. More than one country at the present time is seeking methods and means to check the degenerative tendencies that threaten them, and the question whether our civilization is to last seems largely to depend on the success of these efforts.

Casualties of the Fourth. The self-imposed annual task of one of our most prominent medical journals, that of compiling statistics of the casualty list depending directly or indirectly upon Fourth of July celebrations, has been published for 1905, and its findings furnish matter for grave reflection for physicians—indeed, for all interested in the general welfare. The list that has been compiled must necessarily be incomplete, particularly as far as trivial and non-fatal injuries are concerned, but offers material for comparison with previous years, having been gleaned from the same sources. The total number of cases of tetanus for 1905 was 104, which, added to 95 deaths from other causes, gives a total of 199, while the non-fatal injuries number 5,994. The great cause we have for congratulation is that the num-

Digitized by Google

ber of cases of lockjaw have been greatly lessened since 1903, when 415 died from this one cause alone. This is due, undoubtedly, to the fact that blank cartridge wounds have also been greatly lessened, 1,672 for 1903 as against 809 for this year. As wounds of this character have contributed by far the largest number of cases of lockjaw, their decrease can account for the comparatively few instances of this grave malady.

After the slaughter of 1903 the medical and lay press joined forces in a crusade that had for its object the lessening of the great casualty list, and particularly of the deaths from lockjaw. The nature of the disease was explained, the peculiar anaërobic characteristics of its causative agent, the excessive danger of the closed wound, so frequent an accompaniment of the blank cartridge, the value of anti-tetanic serum, and particularly of prophylactic injections of the same in suspected cases. By this concerted action of the press ordinances were enacted in the large cities and enforced, prohibiting the sale of the toy pistol.

The beneficent results obtained in 1904 were widely heralded, but the press, satisfied with what had been done and intent upon more worlds to conquer, lost interest, failed to remind the public of the perils in store, and the harvest of 1905 was fully as great as that of the previous year.

It is clear, then, that to expect a progressive lessening of mortality from Independence Day folly, we must keep continually before the public the danger to which they are subjecting themselves by their idiotic display of so-called patriotism. This can only be done by the aid of the public press, and the distaste which the average physician has for newspaper notoriety should give way to this call of humanity. There are thousands of newspapers throughout this great country eagerly scanned by their constituents. If for several weeks previous to the annual celebration letters from prominent physicians in the communities in which they reside be published over their own signatures in their local papers, much good might be accomplished. The newspapers, recognizing the urgency and earnestness of the medical profession, would unquestionably take up the subject with renewed vigor. It is a thing which must be constantly kept in the public mind. Every year we have a new crop of youthful enthusiasts, and it is upon the youth of the land that the terrible scourge of tetanus is most likely to fall.

Such a plan as has been suggested could hardly be regarded as unethical, considering our duty in its broadest sense as humanitarians.

	1903	1904	1905
Deaths from tetanus	406	105	104
Deaths from other causes	60	92	95
Total	466	197	199
Non-fatal injuries	3,983	3,986	5,994
Total deaths for three years			862
Total non-fatal injuries			13,963

In comparison, at the battle of Bunker Hill, famous preliminary to the

Digitized by Google

first dawning of Independence Day, there were killed 145 Americans and 359 of the British, a difference that speaks for itself.

Smallpox has made its appearance in the state, one case having been reported in Canaan; contagion from Canada.

Error Corrected. By mistake Thetford appeared in the list of towns reported as not represented at the last School of Health Officers.

Digitized by Google

Digitized by Google

614.0979
V2b

Bulletin No. 3, Volume VII.

Issued Quarterly by

Vermont State Board of Health,

March 1, 1907.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS:

Exanthem of Scarlet Fever and Some of Its Counterfeits, and the Clinical Significance of Skin Haemorrhages in Diphtheria, by John MacCombie, M. A., M. D., Aberd., Medical Superintendent, Brook Hospital, Shooters Hill, Woolwich.

Board of Health Regulations Issued by the State Board of Health.

Sanitary Laws, by Robert Lawrence, Esq.

Limitations of Embalmers' Examinations, by C. M. Ranger.

Annual Report of the Local Board of Health: What the People Ought to Know, by Hon. H. L. Stillson, Bennington.

Port Inspection.

News Items.

Report of Examinations at the State Laboratory for the Three Months Ending February 28, 1907.

BRATTLEBORO, VT.

1907

Digitized by Google

Digitized by Google

EXANTHEM OF SCARLET FEVER AND SOME OF ITS COUNTERFEITS, AND THE CLINICAL SIGNIFICANCE OF SKIN HAEMORRHAGES IN DIPHTHERIA.

By John MacCombie, M. A., M. D., Aberd.,
Medical Superintendent, Brook Hospital, Shooters Hill, Woolwich.

The most widespread of the eruptive fevers is scarlet fever. The difficulties that beset us in its diagnosis, and in the diagnosis of cases of acute illness in which an exanthem simplating that of scarlet fever presents itself, have induced me to devote the major portion of my observations this evening to the consideration of the exanthem of scarlet fever and some of its counterfeits.

The Exanthem of Scarlet Fever.

Perhaps you will permit me at the outset to indicate very briefly the salient features of the exanthem, and the characteristic lingual and faucial appearances of scarlet fever. The typical rash of scarlet fever is twofold in character. A finely punctate, slightly-raised papular portion, and an erythematous portion, the finely punctate portion being usually regarded as the most characteristic feature of the rash. Most cases show erythema along with punctation; others, especially those showing evanescent rashes, have erythema and little or no punctation; while in others the punctate rash overshadows the erythematous.

The eruption is general; the tint of the rash in ordinary cases and at its first appearance varies from a delicate rose-pink to light red, the punctae showing as small specks of a more intense red than the general erythema. In many cases the rash is not present on the face, but not infrequently it appears there first, is mostly erythematous in character, affects chiefly the forehead and cheeks, and as it usually avoids the skin round the mouth, an area of circumoval pallor results which contrasts markedly with the reddened cheeks. The rash on the face often attracts little or no notice, being regarded as merely a flush. Usually the complete exanthem is best marked on the trunk and extremities, the punctation being most noticeable on the neck, trunks, arms, and inner aspect of thighs. The rash appears on the first or second day of illness, and is usually—in children at least—preceded by headache, nausea or vomiting, sore throat, and some rise of temperature.

Generally speaking, the punctate portion of the eruption is slightly raised, while marked papulation of it is evident, in many cases on the upper and lower extremities, the papules being often as large as a good sized pin's head. The papulation shows as numerous red papules, well raised above the level of the surrounding skin; it is most marked on the legs and forearms usually, but it is often to be noted also of the thighs and arms, and sometimes it is noticable on the trunk. It persists for some time after the disappear-

Digitized by Google

ance of the general exanthem, the papules becoming smaller and less bright in tint, till they gradually disappear. It consequently affords valuable aid in diagnosis when one is called in to a case of suspected scarlet fever after the general eruption has faded. If in such a case the tongue and throat signs be those of scarlet-fever, and papulation be present on the extremities, the case can with certainty be diagnosed as scarlet fever.

In regard to lingual and faucial appearances, the characteristic tongue is at first white with the fungiform papillæ showing as red dots on the white ground; in the course of two or three days the tongue epithelium begins to peel off, and by the fourth day, usually, the tongue is clean and markedly red, the papillæ being red and prominent, standing well out from the surface of the tongue. The majority of cases show this appearance of tongue, but not all; in children it is usually present, in adults it is often absent.

The faucial appearance in their simplest and mildest form consist of a ring of bright red injection involving the free edge of the palate and tonsillar pillars—with sometimes red punctation of the general surface of the soft palate. The tonsils may or may not be reddened. There is very little swelling of the parts in the mild cases. In more marked cases the tonsils share in the injection and are swelled, often showing small dots of exudation on the crypts.

A word with regard to toxic scarlet fever. In this there is great prostration from the onset and vomiting is usually marked and often persistent. The exanthem is not infrequently coarsely punctate and sparse, with little or no erythema. The lingual and faucial signs are invariably characteristic.

The typical desquamation that follows the disappearance of the exanthem is a general one involving practically the entire skin. It commences as minute points of desquamation which, speedily enlarging, assume the form of pinholes of various sizes, and thereafter it is more or less flaky. On palms, fingers, and soles the epidermis usually peels off in shreds and flakes. This general pinhole or ringed desquamation is, I think, characteristic of scarlet fever.

If, in every instance, scarlet fever conformed to the typical fever just described and were its rash not counterfeited by eruptions occurring in other acute diseases, mostly in their early stages, its diagnosis would be a comparatively easy matter. But these counterfeits stimulate so closely the real article that they present many difficulties in diagnosis, and therefore they merit close consideration if one wishes to avoid arriving at an erroneous conclusion as to the precise disease from which the patient is suffering.

I will consider first the prodromal scarlatiniform eruption appearing in measles, small-pox and chicken-pox.

SCARLATINIFORM RASHES.

1. *In Measles.*—The true eruption of measles is sometimes preceded by a bright red erythema investing the face, trunk, and extremities, appearing on about the second day of illness, when the catarrhal symptoms, it may be,

Digitized by Google

are little in evidence or not at all. The erythema is usually not punctate in character, though in rare instances it is punctate. The tint is indistinguishable from that of the scarlet fever exanthem. So close is the resemblance that a good many cases find their way into fever hospitals, where on the third or fourth day of illness the true eruption of measles commences to appear. Concurrently with its appearance the prodromal erythema begins to fade, and the real nature of the attack is revealed. Before the vogue of isolation hospitals had arrived, you had better opportunities for observing such cases, but now, the moment you have made your diagnosis of scarlet fever, the patient is removed to the fever hospital, and you have no further opportunity of observing the case.

One naturally asks if the prodromal exanthem affords any sign that would lead one to doubt its being the rash of scarlet fever. Well, in the great majority of cases it does not show punctation, and, as most scarlet fever rashes do show punctation, that feature should at once prompt one to very careful examination of the case before arriving at a diagnosis. Probably the child—for these prodromals occur in children, only, as far as my observation goes—will not have complained of sore throat, vomiting will most likely be absent, and there may be a sharp, short cough. On examining the throat there may be, but usually is not, some redness of the fauces; no definite help will therefore be obtained from the signs there; but if, on examining the buccal mucous membrane opposite the molar teeth, Koplik's spots are visible, then the case is measles, not scarlet fever. These minute, whitish, raised spots of mucosa, about the size of a very small pin's head, may also be present on the buccal mucous membrane generally, but their most common site is opposite the molar teeth, consequently that is the spot to which one's observation is directed in the first instance.

These Koplik's spots do not stare you in the face when you look into the patient's mouth. You want a bright light, and it is necessary to stretch the mucosa with the end of a spoon or tongue depressor before they will catch your eye. They are often exceedingly small, mere minute, whitish dots, though in many cases they are of the size of a very small pin's head, and occasionally larger. In many instances there is a thin red line surrounding each spot, but this is by no means constant. Sometimes there may be only six or twelve such spots all told, while in other cases they are quite numerous, dotting the buccal mucosa, and occasionally they form confluent patches of the size of a large pea opposite the molar teeth. The favorite situation for these spots is, as I have said, the buccal mucosa opposite the molar teeth, and they are often limited to this region; but in some cases you will find them dotted along the mucosa of the lips, gums, and, in rare instances, on the palate and fauces.

They are not present in scarlet fever. I take it that, in arriving at a diagnosis in a case which suggests scarlet fever, we all examine the tongue and throat. If in addition we made it a rule to look for Koplik's spots in all such cases, the counterfeit eruption in measles would, in almost every case,

Digitized by Google

be detected and increased accuracy in diagnosis be thereby attained. Of course, one may meet with a concurrence of measles and scarlet fever in the same patient, the two infections running their symptoms side by side; but that is an extremely rare event, and in very many years' experience I can only recall a few such cases.

Some cases of German measles may cause difficulties by reason of their resemblance to the scarlet fever exanthem. For instance, those in which the eruption is fairly abundant and the individual macules are small. As far as my observation enables me to speak, there is in these an absence of the purely erythematous rash of scarlet fever, the spots are to be noted on the face as well as on the trunk and extremities, and on the trunk the individual macules are larger than the fine punctation of scarlet fever to be noted in that situation. It is true that on the forearms and legs the scarlet fever rash is frequently observed to be papular, the individual spots being as large as a good-sized pin's head. But that, although very typical of many scarlet fever rashes in these situations, is not to be regarded as the typical punctation of the scarlet fever rash considered as a whole.

2. *In Small pox.*—Scarlatiniform prodromal rashes counterfeit the scarlet fever exanthem in smallpox more frequently than in any other disease. Those of you who have had experience in an outbreak of smallpox will doubtless have seen examples of these. In many such cases the rash is purely punctate and limited to tl.e trunk and thighs, and is especially evident in groins, flanks, and auxiliary regions. In others it is limited to flexures and does not affect the trunk generally. These rashes appear on the second or third day, and before the true smallpox eruption has come out. In tint they are bright brickred, with a tendency to deeper hue in the flexures, and the punctae are, generally speaking, larger than the punctae of scarlet fever, and are not raised; there is little if any superadded erythema, so that you have either a large extent of purely punctate rash or such a rash limited to flexures. The diagnosis of these scarlet fever counterfeits is sometimes puzzling, but due regard to their almost purely punctate character, the nature of the attendant symptoms, namely, severe headache, backache, and usually high pyrexia, and profound malaise, coupled with an absence of sore throat or scarlet injection of fauces—a point of the utmost diagnostic importance —should impel one to suspect the disease to be smallpox, not scarlet fever.

If definite history of exposure to infection of smallpox be obtained it is safe to say that such cases will prove to be smallpox, and may be certified accordingly. But if such cases occur when there is no prevalence of smallpox or history of its infection, it is well to defer the diagnosis for twenty-four hours, when the appearance of the characteristic smallpox eruption will have shown the true nature of the attack.

A much more difficult problem in diagnosis is presented when we are confronted with the scarlatiniform prodromal sometimes met with in haemorrhagic smallpox. The prominent features of this are, the most complete investment of the skin with a vivid red erythema closely resembling that of

Digitized by Google

scarlet fever. It appears usually on the second day of illness, affecting the entire skin in most cases, including even the face, is at first of a bright red tint exactly resembling scarlet fever rash, except that there is no punctation. In the course of twenty-four hours the tint has changed to a deeper red all over, while in the groins it begins to assume a purple shade, and on close examination the presence of petechia may be detected there. But one is usually called to such a case before any marked deepening of tint is to be noted in any particular region, and at the first blush the eruption has a peculiarly scarlet appearance, which has often misled the unwary. To heighten the illusion the patient will sometimes complain of sore throat; on examining the fauces there will often be noted a general reddening of the palate and fauces, and it may be with some swelling, but be it noted that this reddening is more widespread than the injection of the free edge of the palate, tonsils, and tonsillar pillars observed in scarlet fever, and is of a deep red, perhaps of a slight purple tinge, in fact, a much deeper hue than the bright red injection of scarlet fever. The differential diagnosis of such cases is extremely puzzling, and I know of no cases in which one is more likely to come to an erroneous conclusion unless one has, in a preëminent degree, the gift of caution that gives pause to the first impression conveyed by the effulgence of the rash, and prompts one to investigate and examine more closely before forming a definite conclusion. What, then, are the important differential features of this prodromal erythema? Its very intensity arrests attention; on looking closely the absence of the punctation is remarkable. True you may have in groins and flexures commencing petechial eruption which would not be present at so early a stage in scarlet fever, but the general punctation of the eruption, which would be evident on the neck and trunk and on the extremities were the case scarlet fever, will be absent. The profound illness of the patient, who is, if I may use a colloquialism, completely bowled over; the headache, above all the intense backache, so characteristic of smallpox, is often present in these cases in very exaggerated form, and backache is a symptom which is not marked in cases of scarlet fever; the absence of scarlet injection of the faucial ring, and in its place often a deep general reddening of the soft palate and fauces—these all point to the conclusion that the case is to prove one of smallpox, not of scarlet fever. Later, when purple spots begin to appear on the skin, with subconjunctival haemorrhage and blood in urine, there is absolutely no doubt that the correct diagnosis is smallpox.

3. *In Chicken-pox.*—In some cases of chicken-pox you may have observed scarlatiniform prodromals. It so happens that the concurrence of chicken-pox and scarlet fever is not at all uncommon, though usually the onset of the two is not simultaneous. If the two diseases be simultaneous in their onset, the case will present, in addition to the usual skin manifestations peculiar to both, the faucial appearance of scarlet fever, with sore throat and general nausea or vomiting at the onset. On the other hand, if there be a scarlatiniform prodromal rash unattended by the throat and tongue signs,

Digitized by Google

and initial symptoms of scarlet fever, then the case is probably one of chicken-pox only. The prodromal rash fades soon after the appearance of the pocks, consequently, persistence of the prodromal along with the true chicken-pox eruption is strongly suggestive of a concurrence of the diseases.

In cases of chicken-pox showing a counterfeit prodromal eruption, there are no throat signs or symptoms, and this alone should make one hesitate to diagnose scarlet fever, for a scarlatiniform eruption in children without confirmatory throat or tongue signs does not necessarily mean that the case is one of scarlet fever.

4. *In Enteric Fever, Scalds, etc.*—Other erythemas counterfeit the scarlet fever exanthem. For instance, in enteric fever, about the end of the second week, you may observe a bright red, flat punctation and erythema, limited to the upper part of the chest, unaccompanied by any rise of temperature or other signs of scarlet fever. The condition lasts a few days, and may not be followed by any desquamation. This is not scarlet fever, yet the limited eruption resembles most closely the scarlet fever exanthem.

Erythemas of the scarlet type following on scalds, burns, and wounds, are not by any means to be regarded as cases of scarlet fever. Purely erythematous rashes without punctation, and with no throat or tongue signs, should most certainly not be regarded as cases of scarlet fever; punctate scarlatiniform rashes without attendant throat and tongue signs of scarlet fever may be, but probably are not, scarlet fever, unless they be followed by the typical general pinhole desquamation which, if it be general, is, I think, characteristic of scarlet fever; but when you get a punctate scarlet eruption with the typical scarlet appearances of throat and tongue, then you are most certainly dealing with a case of scarlet fever.

5. *In Diphtheria after Antitoxin.*—A general erythema of a purely punctate character, unaccompanied by other signs or symptoms of scarlet fever, must negative the diagnosis of scarlet fever, the throat signs being the really important confirmatory point in the diagnosis of such cases. And the same remark applies to general erythemas of a non-punctate character resembling scarlet fever in point of distribution and tint, but unattended by other signs or symptoms of scarlet fever.

Following the introduction of the antitoxin treatment of diphtheria, a great variety of erythemas, usually termed antitoxin rashes, made their appearance in a considerable proportion of the patients to whom the remedy had been administered. All these erythemas, however, are not due to antitoxin, for before the use of that remedy certain cases of diphtheria showed, about the third week of the illness, erythemas of varying types, but mostly of the scarlatiniform. As it is now impossible to differentiate the antitoxin erythemas from those following naturally on the attack, they are all classed as antitoxin rashes. We are now only concerned with those that simulate the eruption of scarlet fever. Many of you have probably seen examples of these. They appear usually during the second or third week after the injection of antitoxin. In appearance they not infrequently mimic the complete eruption

Digitized by Google

of scarlet fever so closely that it is quite impossible to say from the appearance of the rash whether it is scarlet fever or not. The tint is the same; there is both punctation and erythema distributed generally over the trunk and limbs. They are sometimes accompanied by a moderate rise of temperature, and in some cases by an injection of throat closely resembling that of scarlet fever; in fact, the counterfeit of the scarlet fever exanthem is in every respect most complete. I recollect well, many years ago, when diphtheria was first admitted to the Asylums Board Hospitals, a few of my diphtheria patients developed scarlatiniform rashes, throats, and pyrexia during early convalescence. Believing these, in my ignorance, to be instances of scarlet fever, I promptly had them transferred to scarlet fever wards. They developed that disease within a week of their being so transferred. That was before the days of antitoxin. The occurrence of these scarlatiniform rashes is more frequent now, so many cases being treated with antitoxin; and the more of these rashes one sees the less inclined is one to make a positive diagnosis in many of the cases. In the main, the following considerations will help in arriving at a definite opinion. Whether the eruption starts from the site of injection or not, spreading thence over the trunk and extremities, if it be unaccompanied by vomiting, loss of appetite, and symptoms of constitutional disturbances, even if some injection of the faucial ring is to be noted, the case is most probably not scarlet fever. If, however, the rash is ushered in by vomiting, quickened pulse, some rise of temperature, and the eruption does not appear to start from the site of injection, the case is probably one of scarlet fever.

Many of the cases, however, are most puzzling, and the diagnosis is so embarassing that it is not infrequently only possible to decide definitely by the occurrence or non-occurrence later on of general pinhole desquamation whether the manifestations have been those of scarlet fever or only of an antitoxin erythema. Many cases show slight powdery desquamation, and perhaps some peeling of palms and soles, but that is not, I think, to be regarded as the characteristic peeling of scarlet fever.

Such are the more important counterfeits of the scarlet fever exanthem. Many are very puzzling in point of diagnosis, some are impossible, and most are difficult. A good light, daylight if practicable, a clean skin—often a difficult thing to obtain, I fancy, in general practice—and careful observation are essential in the diagnosis of these conditions.

It will have been noted that I have mostly refrained from placing reliance upon pyrexia as a point of value in diagnosis of the cases under consideration. And for the reason that the pyrexia of scarlet fever varies greatly in different cases. In some there is no rise of temperature from start to finish. This is, of course, quite rare, but it occurs. In others, although the temperature will have been raised on the first or second day of an undeniable attack of scarlet fever, yet by the time one may be called to see the patient the temperature may have fallen to normal, while the rash and throat signs persist. Consequently, to place much reliance on the presence or absence of

Digitized by Google

pyrexia for diagnostic purposes would be inadvisable. The clinical thermometer in this connection is sometimes a delusion and often a snare.

SKIN HAEMORRHAGES IN DIPHTHERIA.

There now only remains for me to offer a few observations upon the clinical significance of skin haemorrhages in diphtheria. Those of you who have seen a considerable number of diphtheria cases and have had an opportunity of observing them from start to finish will probably have met with some cases that showed such skin manifestations. It is true that now they are met with for the most part in cases that have escaped early treatment by antitoxin—that is to say, cases that have not come under the notice of the medical attendant until the patient is already poisoned by the toxins of the disease. These, which I may call neglected cases, form a considerable proportion of the cases of diphtheria that find their way into fever hospitals and contribute largely to the diphtheria deathrate. Were it possible to bring all diphtheria patients under antitoxin treatment on the first day of disease these haemorrhagic skin manifestations would be unknown, and the deathrate from diphtheria would be practically *nil*. In support of this statement—which to some of you may appear unduly optimistic—it may be permissable to refer to my own experience at the Brook hospital. During the nine years that the hospital has been open there have been treated 6,755 diphtheria patients; of these, 214 came under treatment on the first day of disease. There has not been a single death among these first-day cases.

The number of cases that have shown skin haemorrhages has been a little over 200, and with very few exceptions death has resulted. No haemorrhages have appeared in cases brought under treatment on the first day of disease; one or two cases that came under treatment on the second and third days of disease have become haemorrhagic and died, but the great bulk of the haemorrhagic cases has occurred in those that came under treatment on the fourth, fifth, or later days of disease, and the recoveries have been practically *nil*.

At what age are these skin haemorrhages met with? Their occurrence in patients over twelve years of age is most exceptional. Consequently it is in children under that age that one expects their appearance, and they are perhaps more frequently seen in children under seven than over seven,

In what forms of diphtheria do they most often occur? In severe faucial diphtheria, with which nasal diphtheria is usually associated, most rarely indeed in laryngeal diphtheria, and then perhaps only when marked faucial diphtheria accompanies the laryngeal. The haemorrhagic manifestations appear usually towards the end of the first week, from the fifth day onward, and consist of deep purple, or inkspots distributed on the skin, being in some cases more marked on areas subjected to pressure, but by no means limited to these. The situations on which they most commonly appear are the trunk and extremities, but they also sometimes develop on the face, neck,

Digitized by Google

and ears. The spots are not, as a rule, numerous, not exceeding half a dozen in the majority of cases, often only three or four. They vary in size from a small pea to that of a sixpence, or larger, sometimes assuming in extreme cases the dimensions of large bruises. There may also be scattered red petechiae in addition, but these are not of the same prognostic significance as the ink spots. If there be only one or two small purple spots the patient has some slight chance of recovery, but if there be a greater number death is almost certain to result. For this reason they afford a most valuable aid to prognosis which it is wise not to overlook. In some of the cases persistent epistaxis precedes or accompanies the appearance of these skin signs. Incidentally I may remark that the occurrence of persistent epistaxis about the fourth or fifth day of faucial diphtheria leads one to anticipate the very probable occurrence of skin haemorrhages within a short time thereafter. Haematemis is sometimes present, due in many cases to haemorrhage from the mucous membrane of the stomach.

Persistent vomiting and signs of cardiac failure are to be noted in most cases showing skin haemorrhages, the patient dying of toxaemia and cardiac failure. The duration of life after the date of onset of the skin haemorrhages is usually four or five days, sometimes less, while some cases live for a week or a fortnight. In pre-antitoxin days patients hardly ever survived more than two days after the skin haemorrhages appeared.

Cases which recover are those in which vomiting and cardiac failure are absent, or are little in evidence, but unfortunately such cases are extremely rare.

BOARD OF HEALTH REGULATIONS ISSUED BY THE STATE BOARD OF HEALTH.

SCARLET FEVER: CALLED ALSO SCARLATINA, CANKER RASH, ETC.

Scarlet Fever is a very contagious disease, attended by a sore throat and a bright scarlet eruption which gives it its name. Sometimes the eruption is slight or even lacking. The period of incubation (time from exposure to infection till the first symptoms appear) is brief; from a few hours to six or seven days; rarely exceeding this period.

The specific poison of the disease is in the discharges from the nose, throat and ears, and especially in the skin. For this reason the particles of dead skin which are thrown off during convalescence are very infectious. As this process of *desquamation* is sometimes prolonged several weeks in a given case, it is necessary that great care be taken to confine the case in quarantine until the *process is complete*. Particles of discharge from the

Digitized by Google

nose and throat and particles of dead skin may adhere to furniture, clothing, toys, books, and the room itself, and retain their infective power. Such particles may be distributed in milk also.

The disease is dangerous as long as the desquamation continues and as long as any unusual discharge from the air passages persists.

There are mild and severe cases. The former may give rise to the latter. Hence the necessity of great care in making a diagnosis. Those cases with little eruption or none must be watched by the physician with great care, *and in case of doubt the public must be given the benefit of the doubt and such a case quarantined.*

All ages are susceptible to the disease, more especially those under ten years. The poison may be *inhaled* and it may be *swallowed* with food or drink. It prevails most during cold weather, and is distributed frequently in the schools.

On these facts are based our measures for preventing the disease:

Health officers should study carefully the Rules and Regulations of this Board, as they apply to this disease. Especially should they promptly notify teachers and librarians of public libraries, as these rules specify, and, after the quarantine is raised, see that no pupil returns to school without a *written permit.*

Scarlet fever must always be subjected to full quarantine.

Remember that the smaller the space infected by the patient the easier will the poison be gotten rid of after recovery.

Therefore, confine the patient and nurse to a single room, or suite of rooms, not only during the height of the disease, but also *until desquamation is complete.* Keep the patient (and therefore the poison) in the smallest possible space, and the premises may then be easily and safely disinfected at the proper time.

As soon as the diagnosis is made, or the scarlatinal nature of the disease *suspected* (for the law requires that *suspicious* cases be reported), remove the patient and nurse to an isolated room from which all unnecessary furniture, carpets, rugs, clothing, hangings, etc., have been removed. Secondary cases, either in the family or outside, are unnecessary. They should never occur.

During the quarantine carefully follow all the precautions contained in the Regulations of the Board. Remember especially that poison may adhere to clothing and other things, *may be carried by third persons.*

The doctor should exercise great care. He should always wear a cap and gown on his visits, and disinfect face, hands and hair, as far as these are exposed to infection, before leaving the quarantined quarters.

Letters and other mail matter must never leave the quarantined premises, unless disinfected; for the disease is sometimes spread in this way.

Children from families where there is scarlet fever must observe the quarantine (never attend school during the quarantine).

Business men, mechanics and laborers of all kinds must observe the

Digitized by Google

quarantine (never go to work from a quarantined house). This applies to dairy laborers and those who handle milk and milk products in creameries and on milk routes.

Every member of a quarantined household must respect the quarantine. Health officers should be very careful about giving written permits (as provided in the Regulations) to those under quarantine to leave the premises.

During the continuance of the disease, a daily inunction of the body of the patient with some non-poisonous ointment restricts somewhat the dissemination of contagious particles of skin as well as relieving the itching from the rash.

After three weeks, daily warm baths may be practised until desquamation is complete.

After the case is well, the Health Officer should personally superintend the disinfection, according to the Rules and Regulations of this Board.

STATE BOARD OF HEALTH.

Copies of this circular may be had by addressing the secretary, Dr. Henry D. Holton, Brattleboro, Vt.

SANITARY LAWS

By Robert Lawrence, Esq.

With the increasing complexity of our civilization, and the advance in knowledge of the diseases of the human body and the means of their prevention, the health officers, state and local, have become some of the most important officials of our communities, at certain periods, perhaps the most important. I wonder how many of the citizens of the state, how many of you, in fact, who are chiefly physicians and health officers yourselves realize quite how important. The health officer presides over our entrance into this world and we are forthwith ticketed and labeled in the birth certificates, which he furnishes; he may quarantine us and keep us from business, no matter how important to us it may be that we should be out and about; he may enter our homes and take our sick to public hospitals, where they may be shut off from our intercourse; he may take proceedings to stop our business as a nuisance; we cannot build our homes without his inspection and approval; and finally, we cannot be laid in our last resting place until he has given his permission.

There is no phase of human life which he does not touch. He is the living reminder to us all that life in communities, civilized life, means the subjec-

Digitized by Google

tion of the interests of the individual to the greater interests of the home, the town, the state, the nation, and humanity throughout the world. He is created to show us how we may wisely forego our personal convenience for the good of the people among whom we live, if we will, and to compel us to consider others if we are unwilling. The health officer exercises greater arbitrary powers than any other civil official that I know, state or national, except perhaps in time of war.

How essential it is then that the man who exercises these powers should be wise, tactful, and discreet in his administration, and at the same time firm and energetic when occasion requires. We may legislate and prosecute until doomsday, but if you gentlemen, to whom the administration of the health laws is very largely entrusted, fail to do your duty we can accomplish nothing. And our legislature recognizes this, for in Section 15, of No. 113 of the Laws of 1902, it enacted that "Any health officer or member of a local board of health, who shall refuse or neglect to perform the duties imposed upon him by this act, shall on conviction thereof pay to the treasurer of the state a fine of not less than five dollars nor more than one hundred dollars and costs of prosecution."

What are some of these duties imposed upon you by law? I shall not attempt to enumerate them in detail, to do that would take up the rest of your session; but I shall try to call your attenion briefly to some of the more important. First of all, the duties of the local health officer concerning contagious diseases. Section 19 of No. 113 of the Acts of 1902 provides that "the head of a family in whose home there occurs a case of infectious or contagious disease, dangerous to the public health, shall immediately give notice to the health officer of the town or city in which he lives. A physician, who knows or suspects that a person whom he has been called to attend is sick or has died of a communicable disease dangerous to the public health, shall at once quarantine and report to the health officer the place where such case exists, the name, degree of virulence and cause or source of the disease, and such other facts relating thereto, as may be necessary for the health officer to make examination and act in the premises."

This is the starting point of everything, and here is where the health officer most needs the coöperation of the community, and the physicians in particular. Failure to report communicable disease promptly goes far to destroy the effects of a quarantine. The health officer must know of the disease as soon as it is discovered in order to take any steps to prevent its spread. For this information, he must depend largely upon the physician who treats the case. The head of the family too often does not even know it is his duty to make a report, and if he does is many times in too much trouble himself to give a thought to it. Still much good might be accomplished by the local health officers if they would see to it that every householder at least had the opportunity to know his duty in this respect and to realize something of the importance of its prompt performance to the community at large. Create a public sentiment (and you can do it) that

Digitized by Google

will be strong enough to compel obedience to this law from doctors and laymen alike. When the people fully understand what it means to them to have contagious diseases reported and isolated, the law of self-preservation will create a demand for rigid compliance with the law that nothing can withstand.

In times of widespread disease of this kind the people wake up, although usually not until the time for preventing most of the disaster is past. They need to appreciate that "eternal vigilance" in these matters above all others is the price of safety and life itself, if not of liberty. And in this connection let me call your attention to the constant change in the people who make up our villages and towns; young men and women are constantly coming on the scene to take the places of those who are passing off; old inhabitants move away and new ones come; so our population is not a stagnant pond unchanged and constant, but a flowing stream moving now slowly and now with great rapidity past the places which we name cities and villages. The importance of the health regulations must be kept constantly before our citizens and especially the importance of their duties of notifying the health officers of the presence of contagious disease, the starting point of all action.

But the health officer must not stop here. He must have other avenues of information, make friends with the local officers of the law, the newspaper men, and, in short, gain the confidence and coöperation of the greater part of the citizens of his town; and he can do it if he will. There is a penalty provided for failure to comply with this statute, and although it should be the last resort, a few prosecutions may be necessary to make neglectful doctors or laymen realize that there is an iron hand beneath the glove of tact and courtesy which masks it. If so, go to your prosecuting officer, usually the state's attorney, and lay your cases before him. Do not be discouraged if every violator is not convicted, for probably a large majority of violations of law have to go unpunished for want of sufficient legal evidence to convict or even to warrant proceedings in court; but consult with the officers, and make your plans to catch the next violator in the legal net so fast that he cannot escape.

This is a matter upon which you cannot compromise. You must have information of the presence of the enemy as soon as he appears if you are to put him to rout as effectively as this same neglectful community will surely expect of you. If an epidemic should spread from failure to quarantine promptly, even though the fault should rest with those whose duty it was to notify you, the friends and relaives of those who suffer and die from it will be in no mood to listen to excuses or explanations. It is a part of your duty to see to it that you get this information, and this statute puts into your hands a means of doing so.

In passing, I may allude briefly to vital statistics. Your duty as health officers, as it touches these matters, concerns itself chiefly with your reports to the secretary of the State Board of Health and the issuance of permits for

Digitized by Google

the burial or removal of dead bodies. The importance of careful attention in making out these records, not only to this but far more to future generations, I need not dwell upon. A moment's thought is enough for any of us upon that point.

There is one matter, however, to which I wish to call attention in this connection. In Rutland county a man residing in one town recently met his death by accident in another and was buried in a third. The burial permit was issued in due form by the health officer of the town where he resided and the remains were removed and buried, all those concerned apparently thinking that the law had been complied with. This was a mistake. The burial permit must be issued by the health officer of the *place of death,* not of residence, if they happen to be different.

Health officers in Vermont are fortunately not often called upon to deal with serious epidemics, but it is well to be prepared for trouble before it comes, and our laws are very well framed for enabling both the local and state Boards of Health to deal effectively with any emergency of the kind. Let us inquire for a moment what a health officer should do when a contagious disease is reported to him. First of all he should quarantine the case and those who may have been exposed to contagion, which he may do under Section 20 of Act No. 113 of the Laws of 1902, without waiting to call a meeting of the local board of health. Then he should, as provided by the same section, notify the secretary of the State Board of Health by telegraph or telephone if the situation is serious—varioloid, smallpox, cholera and yellow fever—and report weekly concerning the disease if it becomes epidemic. The health officer may go a great way in enforcing protective measures in an emergency without waiting to call the local Board together; but if the situation is at all serious a meeting of the Board should be had as soon as possible and necessary action taken to insure every reasonable precaution. The power of the Board is almost unlimited. Let me read from Section 15 of Act No. 113 of the Acts of 1902, the *Vade Mecum* of the health officers:—

"If any person knowing himself to be infected with smallpox, or other infectious or contagious disease, dangerous to the public health, comes into any town or city in this state from any other town or city in the state, or from without the state, without previously obtaining consent of the health officer in the town or city into which he enters, or if a person knowingly and voluntarily communicates or receives the infection of smallpox, or other infectious or contagious disease in any town or city in this state, without the consent or approbation of the local Board of Health, he shall on conviction pay a fine to the treasurer of the state of not more than two hundred dollars."

You will see what broad powers are conferred upon your local Boards. You are virtually given the direction of the life of the community for the time being; no door can be closed against you; no private interest or public expense can stand in your way in stamping out disease; even the officers

Digitized by Google

of the law, sheriffs and police, are put at your call. Action prompt and vigorous, but well considered, is what is wanted, and the community puts itself into your hands for the time that it may be had. You will not have much time for thought when the emergency comes, therefore know your duties and powers beforehand and plan your course of action in advance as far as possible. It is perhaps unnecessary for me to say that the local Board of Health of each town or city is composed of the selectmen or aldermen, as the case may be, and the local health officer, who is also the secretary and chief executive officer of the Board.

I have only touched briefly upon a few of the duties and powers of this Board. You may inspect buildings thought to be unsanitary, order premises cleared of nuisances, watch over the public water supply and prevent its pollution, regulate butchering when carried on within two hundred feet of any dwelling, and in general make it your business to know about any matter that concerns the public health and guard against any injury to it.

With the powers thus conferred upon you, you assume great responsibilities. Upon you will depend in large measure the success or failure of the laws relating to public health, no matter how well drawn. To an unusual extent the exercise of the functions of a health officer calls for discretion and tact and consideration for those he is dealing with. Much power must of necessity be given to him, which will become intolerable to the people if it is not used with sound common sense. The laws are purposely couched in general terms and are made broad in their scope, wisely leaving their adjustment to local conditions to your good sense. Each unusual situation must be dealt with by itself and no general rule can be formulated to meet each one.

If I may be allowed a word of counsel, which is not legal, I would say strive for an enforcement of the laws; but remember that no law can be effective or long remain which does not have the support of public sentiment, and your wise or unwise conduct in office will largely make that sentiment. The particular manner of doing things is of less importance than getting them done. The men with whom you have to deal for the most part are laboring under the heaviest burdens life has to bear; in most of the homes you visit, sickness and perhaps death stalk grimly within the walls. It will be well to remember the other man's great burden, and though firm, be patient, forbearing, kind, tempering what may seem to him the harshness of the law with human sympathy. Vermont has a splendid record of progressiveness in dealing with the problems of health regulation and is to be congratulated doubly upon her laws and the men to whom, as a rule, their enforcement has fallen. More of her people should know of what is being done, what the laws require, and the reasons for infringing upon their natural rights. We must all go forward together, but under your leadership, which I doubt not will take us still further along the path of progress so well followed in the past.

Digitized by Google

Mr. Lawrence then proceeded to answer the following questions presented by different members of the School:—

Question.

When a body is to be carried by rail out of the state, is a *transit* permit necessary in addition to the regular *removal* permit?

Answer.

The railroad regulations require a transit permit to be fastened to the box in which the remains are placed, and the railroad authorities will not accept remains for transit which are not provided with a transit permit.

Our State laws do not provide for a transit permit under that name, but they do provide for a removal permit, which must accompany the remains (See Section 22 of No. 113 of the Acts of 1902, and Sec. 5 of No. 140 of the Acts of 1904). The first section referred to requires a removal permit to be signed by a legally qualified physician; the latter section requires the removal permit to be signed by the health officer. The substance of the removal permit provided for in each section is substantially the same, each requiring the statement that the deceased did not die of any of the communicable diseases therein named. These two sections should be put under one head and reconciled at the next session of the legislature; but until they are amended, every removal permit should be signed by the health officer, and if he is not a legally qualified physician, it should also be signed by such a physician to avoid any question. If the railroads accept this removal permit as a transit permit it is sufficient, but I understand they have their own form which must be signed by the health officer, and where they do the health officer should attach both the removal permit provided by law and the railroad transit permit.

Question.

What is meant where it reads, "the same as for ordinary professional services"?

Answer.

Section 1 of No. 138 of the Acts of 1904 reads, "for each report of a contagious disease he (the health officer) shall receive from the town or city for which he acts fifteen cents; for each biennial report one dollar; and for sanitary inspection, placarding, quarantining and disinfection of infected buildings and premises, the same as for ordinary professional services unless he is employed for a stipulated salary." That means a reasonable sum; what a man duly qualified to perform like service, usually a physician, would expect to be paid if called upon.

Question.

What shall we do with cases of head lice and impetigo in public schools?

Digitized by Google

Answer.

I am informed that impetigo is a contagious skin disease. Quarantine cases which appear and see that they are treated. This disease usually occurs in poor, ignorant families and the health officer could go to the expense of having a physician hired if necessary, and keep the infected children out of school until cured. "Head lice" is hardly considered as a contagious disease, but the health officer would have complete power to deal with it. If I were a health officer I should compel the children to stay out of school until they got rid of the lice, and have them treated if necessary.

Question.

How should a health officer proceed against an individual in another town or another state, who knowingly comes into his town afflicted with a contagious disease?

Answer.

Section 15 of No. 113 of the Acts of 1902 provides: "If any person knowing himself to be infected with smallpox, or other infectious or contagious disease, dangerous to the public health, comes into any town or city in this state from any other town or city in the state or from without the state, without previously obtaining consent of the health officer in the town or city into which he enters, or if a person knowingly and voluntarily communicates or receives the infection of smallpox, or other infectious or contagious disease in any town or city in this state, without the consent or approbation of the local Board of Health, he shall on conviction pay a fine to the treasurer of the state of not more than two hundred dollars." If any one comes into your town afflicted with a communicable disease (I should strike out the words contagious and infectious in this section and wherever they occur in these laws, and insert the word communicable instead) the first thing is to quarantine him, and if you think he needs more punishment, prosecute him. The only trouble is it must be proved that he knows that he is infected. If he were to come in and go out again, I presume there would be considerable difficulty in getting a requisition honored by a governor of another state. If some one came into your town for the deliberate purpose of spreading disease, I should try a prosecution as an experiment.

Question.

Can a local Board of Health promulgate certain rulings relative to the disposal of sink drainage into the highway ditch where there is no public sewerage system, and will that ruling be authoritative?

Answer.

No, I do not find any provision whereby a local Board of Health has power to adopt and enforce rules which are general in their scope. Section 11 of No. 113 of the Acts of 1902 states:—

Digitized by Google

"The Health officer shall make sanitary inspections whenever and wherever he has reason to suspect that anything exists which may be detrimental to the public health. He may enter any house or other building for the purpose of making such inspection. He shall, as secretary of the local Board of Health, by a written instrument under his hand, order the destruction, prevention and removal within a specified time of all nuisances, sources of filth, or causes of sickness as directed by the local Board of Health, and may under the orders of the State Board of Health order all churches and schools to be closed in times of epidemic or in the face of serious sickness which in his judgment may require the same, and may forbid and prevent the assembling of people in any place when the public health and safety demands the same." Suppose you get such a case to deal with in your town, where the emptying of sink drainage into highways is a nuisance. You may publish a notice that the local Board of Health will take up and order the removal of all such drains as a warning, but it has not the force of a legal enactment. The local Board of Health must deal with each individual nuisance as it comes up, and then if the persons responsible for it do not remove it, make trouble for them. I don't think the local Boards have any such power as the State Board has to make rules that apply generally to a community, but each case must be dealt with by itself.

Question.

Given a case of diphtheria, the doctor notifies the health officer as required by law, but the health officer neglects to quarantine, will an action for damages lie against the town for such neglect, provided unsuspecting persons contract the disease?

Answer.

I think the man who asked that question expected the supreme court here to-day. It is next to impossible to give a brief answer to such a question which would be of any value or assistance whatever and I shall not attempt it. Every case in court and especially every negligence case turns so largely upon the particular circumstances of the matter in question, that no general rule can be laid down which would be a safe guide. From a health officer's standpoint there is of course but one answer: Don't get into that fix and you won't have any trouble.

Question.

Should a health officer insist on complaints of nuisances being made to him in writing?

Answer.

The law does not require it, but the State Board of Health requests that all complaints be put in writing. You must remember that you are in office to take care of the nuisances in your community, and if some one comes in

Digitized by Google

and objects to putting his complaint in writing I should not advise you to refuse to attend to it. But it certainly is the duty of every health officer to make a written record of every complaint with the name of the complainant, the time and place, and the principal facts regarding it.

Question.

The registration law of 143 of 1904, in amendment of No. 114 of laws of 1902, provides that a person dying without medical attention, the head of the household or next of kin shall notify the health officer who shall, etc.

Chapter 186, Section 1 provides that the dead body of a person found lying dead out in the town, the selectmen shall, etc.

The registration act gives the health officer power to find out the cause of death even to the holding of an autopsy; the Vermont Statutes state that the selectmen may order an inquest, etc., my question is which statute takes precedence?

Answer.

No statute takes precedence. The section about the inquest provides that if a selectman is informed that a dead body of a person supposed to have died by casualty or violence is found lying within the town, he may, if the public good requires, apply to a justice of the peace of the county who will inquire into the manner of death of such person. You must remember that your selectmen are members of the local Board of Health. The selectmen and the health officers should work in harmony. The inquest is provided for the investigation of cases where foul play is suspected. When a dead body is found in a town, I think the first thing to be done is to notify the selectmen of that town and the health officer, and in most cases they should probably notify the state's attorney of the county. The health officer should be on hand from the start, and I feel as though the state's attorney should be notified so that he can be there, if he thinks best, to pick up any evidence that he might wish to use in the future.

Question.

Suppose these authorities proceed independently of each other, the selectmen ignoring the health officer, who gives the certificate of death?

Answer.

The local health officer, if there is one, is the only person who can give a certificate of death where there is no attending physician to do so; if there is no health officer, a member of the local Board of Health may issue certificates. See Section 9 of No. 140 of the Acts of 1904.

Question.

Should the health officer be ignored, how is he to comply with said registration act?

Digitized by Google

Answer.

Should the health officer be ignored, the body cannot be buried or removed without a certificate and a permit from the health officer. The selectmen can not legally bury the body or remove it without the permit of the health officer. The health officer has his hand on the situation, and may withold his permit until he is satisfied that the law has been complied with.

Question by Dr. Hasen, South Hero, Vt.

On Monday evening after I left, I was informed that a colored cook dropped dead in my town. She was attending a family summering on the islands. There was no health officer present. Could they go to the selectmen or town clerk and get a burial permit. I understand they are going to embalm the body and take it South. Can they make the necessary arrangements without me?

Answer.

I think they could. It could be given by the deputy health officer.

Dr. Hasen, South Hero, Vt.

There is none there.

Answer.

Then the burial permit could be given by the town clerk. If I understand it properly, any member of the local Board of Health where a death occurs can issue a certificate of death if the health officer is n't there to atend to his business. Under the circumstances existing in your town, one of the selectmen can issue the certificate of death and the town clerk can issue the burial permit.

Question.

Can a burial permit be given for the removal of a body from this state to an adjoining state to be deposited in a vault, and then later to be removed from that vault back to this state on the same permit? Is this permit sufficient authority for burial in this state?

Answer.

No. You must have a permit to begin with for taking the body out of the state. A certificate of death and a burial permit are necessary. When you want to bring the body back the laws of the state where the body was placed in the vault must be complied with. Our laws (Sec. 6 of No. 140 of the Acts of 1904) require another permit to be issued when a body is removed from a vault.

Question by Dr. H. D. Holton, Brattleboro.

What does the expression *certified* copy mean?

Digitized by Google

Answer.

I should say that a certified copy was one that had been attested by the town or city clerk under the seal of the town or city, if the town or city has a seal. Unless the law requires a *sworn* copy, I don't think an oath is necessary.

Question.

Is a quarantine notice put upon a house by the attending physician (not a health officer) a legal quarantine?

Answer.

Our health laws (Sec. 17 of No. 113 of the Acts of 1902) require that a physician in attendance upon a patient suffering from a communicable disease shall first quarantine it and then report it to the health officer. By posting a notice to warn the public and notifying the members of the household, the physician could, I think, establish a legal quarantine. The State Board of Health under the authority of the statute has prescribed the method of quarantining, and the health officer should carry out the rules laid down by the State Board regardless of the physician's quarantine. It might be questioned whether the physician's quarantine would be legally enforcible after the health officer had a reasonable opportunity to act and had failed to do so. It is hard to say just what constitutes a "legal quarantine" under the present unsatisfactory and rather indefinite state of our laws upon that subject.

Question.

In quarantining a house in which three persons lived—one of which is the owner of the house and is old and demented, does not know her own children, another a maid who has looked after the three persons, and a young man who stays there nights, but did not board there, who became ill with diphtheria—whom should I serve the quarantine notice on, the owner, the maid, or the guardian who lives a mile away?

Answer.

I should say serve it on all of them, if there were any questions at all about it. If served on the demented one, the law would say that the notice was not legally served if she were not in a condition of mind to transact business, as your question implies. I should give notice to the guardian and also to the man and the maid. Never take any chance of creating a legal conundrum to be solved or of giving any person an opportunity to question your quarantine when a little extra precaution will dispose of any doubt whatever.

By Dr. S. E. Darling, Hardwick.

What constitutes a notice? When a written quarantine notice is handed

Digitized by Google

to a party without reading it to him, is that the equivalent of a notice, or whether a party was told that there was a quarantine notice, would that constitute a notice?

Answer.

I should say the right thing to do would be to read the notice and leave it with him. If for any good reason the notice was given the man and he was told that it was a quarantine notice and he did not read it, I think the court would say that he had had a notice. But I should make it a practice to read it to him or have the man read it in your presence; then they could not escape. I don't think these rules say that it should be read, but it is the safer way to do.

Dr. C. P. Newton, Underhill Center, Vt.

Is the notice in the pamphlet sufficient for use? Does it make any difference whether it is printed or written with a pen?

Answer.

A printed blank properly signed is a compliance with the law.

Dr. D. C. Noble, Middlebury.

In case it becomes necessary in a certain section to sewer that section and there is one objection for the running of the sewer, I would like to ask if the local Board of Health has the right to take the property through which the sewer is to run?

Answer.

I do not understand that the local Board of Health has the power to take land for such purposes, but the town or city may take such land by right of eminent domain. In Rutland we had to relay three feet of sewer, and the question came up as to what the city could do about it if the owners were not willing. We decided that the city could take it by the right of eminent domain. I think that towns can proceed for the purpose of establishing a sewer as they can for the purpose of establishing a highway.

E. G. Moulton.

Section 9, page 16, says, "the physician who is last in attendance upon a deceased person during his last illness, shall immediately fill out a certificate of death which shall be on the blank furnished town and city clerks for that purpose by the secretary of the State Board of Health and which shall contain all the facts indicated in the following form, so far as these facts are obtainable. I suppose that means in case notice that the party is dead is given. Often times a person dies in a town and it is only when they come to bury that body that the physician knows his patient is dead. They come without a death certificate. If he has not the death certificate, he cannot

Digitized by Google

deliver it within thirty-six hours as the law says:—the physician filling out the death certificate shall, within thirty-six hours after death, deliver the same to the family of the deceased, if any, or to the undertaker or person who has charge of the body which certificate shall be filed as provided in sections of this act and a certificate of permission for burial, entombment or removal obtained by the person who has charge of the body before such dead body shall be buried, entombed or removed from the town or city. When such certificate of death is filed with the health officer, deputy health officer, or other person as herein provided, such officer or person shall immediately issue a certificate of permission for burial, entombment, or removal of the dead body under legal restrictions and safeguards. So if he has not the death certificate he can not deliver it within thirty-six hours. Does it mean that the physician shall have it and see that it is delivered within thirty-six hours?

Answer.

I think the burden is on the physician. The law says "any physician failing to furnish a certificate of death within thirty-six hours after death of a human being, giving a true and faithful statement of the cause of such death, and all other facts provided for in the blank form for death certificates mentioned in this act, so far as these facts are obtainable, shall be fined not less than ten dollars.

Mr. Butterfield.

Will a burial permit filled out in accordance with the facts of the case answer to go to the sexton who disinters the body, also to the place of burial?

Answer.

Any person or persons desirous of disintering or removing the body of a human being from one cemetery to another, or from one part of a cemetery to another part of the same cemetery, or from a tomb or receiving vault elsewhere, shall first obtain a written permit from the health officer if there be one, otherwise from a majority of the local Board of Health of the town or city where such dead body is interred or entombed. Such permit shall state especially where such dead body is to be buried or entombed and the time and manner of its removal. Any health officer or other person issuing such a permit shall make it in duplicate, one copy of which shall be delivered to the person having charge of the cemetery or tomb whence the body is to be taken, and the other shall be delivered to the person having charge of the cemetery or tomb where it is desired to place the body.

Question.

If a burial is to be made in a second town, then when the remains are

Digitized by Google

taken into the town this permit which contains the information, which is not the original removal, will have to be taken to the health officer of that town?

Answer.

I think that a body could not be removed unless you got a copy of the original certificate.

Dr. W. E. Hunt, Hinesburg.

Is the health officer justified to close schools without the consent of the local Board of Health or the school board?

Answer.

I should advise that the State Board of Health be consulted before closing schools, because their powers are very much more complete and supreme than those of the local Boards of Health. You can communicate by telephone to the Secretary of the State Board and receive your instructions from him before closing a school.

Dr. J. M. Moore.

A body is to be taken into New York state and then back again. If you give a burial permit that should accompany it to its destination and later on it is disinterred and brought back to this state, is a new one necessary?

Answer.

When a body is taken out of the state, to begin with you give a removal permit. That goes with the body. Before that body can be brought back, you will have to comply with the laws of the state where it was entombed. It comes back under the authority of a removal permit from a health officer of another state.

Question.

What becomes of the burial certificates?

Answer.

It would go to whoever disposed of the body, the sexton of the receiving vault or sexton of a cemetery.

G. W. Parker, Irasburg.

Is it necessary to give a burial permit if the body is going out of the state to another state?

Answer.

A removal permit is necessary. I understand that a transit permit does

Digitized by Google

not contain all that a burial permit contains. But you lose entire control of the body as soon as it touches the borders of another state.

Dr. C. M. Ferrin, Essex Junction.

I wish to endorse the suggestion made by Dr. Noble in having the State Board of Health issue leaflets of instruction in cases of whooping cough and tonsilitis and some of those minor diseases of which we are not always informed. The physician is not always called in cases of whooping cough or cases of tonsilitiis, the people get along without calling in a physician and the health officer knows nothing about the case even if a physician is attending. Last year there were quite a number of cases of whooping cough and I saw some of the inhabitants and inquired regarding the situation. They said, yes there are quite a number up there having it, but no physician was called. Now if we had leaflets to send those households they would do an immense amount of good, and I would like to have them issued by the State Board of Health and sent to all the health officers in the state.

Dr. Henry D. Holton.

With regard to the issuing of leaflets to the general public, I think it would be a help to the health officer if the members of the families were notified as to their respective duties in reporting the cases.

Dr. G. G. Hall, South Woodbury.

In case of diseases that are not listed as dangerous to the public health, can we do otherwise than recommend such and such procedure? We can not compel any particular course, can we?

Dr. A. A. Butterfield, Jacksonville.

Some physicians do not report a case of contagious diseases in one case in ten upon the blanks I furnish them with. They merely say to me a week or ten days after they have attended the case, there is a case of measles in such a family. These physicians are outside of my town and I must depend upon the inhabitants of my town to post me.

Dr. Henry D. Holton.

With regard to Mr. Butterfield's question, I would say you can make a complaint against a physician if he does not live in your town for any misdemeanor made in your town.

Our president has just spoken to you regarding the schoolroom as a fruitful place for the propagating of diseases. Now it is reported to you, or it is the common knowledge of all, that some child has come down in a certain school with measles and you know that within two weeks all of those children that have not had it will be coming down with it. I should close up that school and send a written notice to all the parents who have

Digitized by Google

children attending there that their children have been exposed to such a disease and they must be kept in for eight or ten days and not be allowed to go about and communicate with anybody else. I think you can do that and you will surely stamp the disease out. Put this notice in writing always; send it to the parents in writing; keep a copy of it if you wish to, in fact it is the only safe way to do under such circumstances, then when a case of prosecution comes up you have got your notice in black and white. All people exposed to contagious diseases should be kept away from public places and away from others in general.

Dr. I. L. Nowlan, South Strafford.

Dr. Holton has touched on a subject that we are all interested in, but I would like to understand him plainly whether in case a health officer knows that a school has been infected with whooping cough he is to close that school immediately?

Dr. H. D. Holton.

If you know that a child has come down in a school, exposing the whole school, should you close that school immediately? That is the question. I would say yes. You can not tell what children are going to come down. There perhaps were forty children there. If you notify the teacher and the parents that their children have been exposed, that they must keep them in and away from other children, they are not going to spread the disease and you are going to crush it out. But on the other hand, if you allow them to go to school and twenty come down today and expose the others, they will come down in a week or ten days; these in the meantime will go to some concert or picnic and expose another set of children entirely away from that particular school. Measles was reported from Bethel to St. Albans and from Rutland to St. Albans. The report when filled out—where contracted—Ausable Chasm. Some one on that excursion was coming down with that disease, and there were from one to two hundred persons coming down with this disease as the result of that one exposure.

Dr. Frederick Fletcher, Bradford.

Suppose you close the school, and after about a week would you open it again?

Dr. H. D. Holton.

I would certainly wait until the time had expired, a week or ten days from the date of the last case.

Dr. C. P. Newton, Underhill Center.

If a child is at school from another town, and we tell the children to go to their homes as the school is to be closed, and this child leaves the town, what are we to do?

Digitized by Google

Dr. H. D. Holton.

Inform them that a person knowing that they have a contagious disease who enters another town is liable to be fined $200.

Dr. C. P. Newton.

On a train only the other day a husband and wife with a child six or seven years old were traveling; the child had the whooping cough. That child was exposing everybody on that train; what was our remedy?

Dr. H. D. Holton.

Put him off.

Dr. H. D. Holton.

Mr. Stillson spoke of a case reported to him; cause of death exhaustion and remote cause cancer. I got letters from the Bureau in Washington asking for more explicit causes. I get a report—cancer as cause of death. I have written eighty letters asking what part of the body was affected in order that the Washington authorities may know how to classify the deaths. I get exhaustion—what was the cause? I get marasmus—what was the cause? I get malnutrition— was it tubercular or what? I get one like this quite often—malnutrition or want of breath. We had expected to have Dr. King here as he promised to come, but in April he died from emphysema, and while he may be here with us in spirit he is not here in flesh.

LIMITATIONS OF EMBALMERS' EXAMINATIONS.

An Address Before the Conference of Examining Boards by C. M. Ranger.

The requirements for entrance to the embalmer's examination are not very severe. If the candidate has reached the age of twenty-one years, is of good moral character, and has a limited experience in the work of embalming, he is eligible in most states to apply for a license. His intellectual attainments in general education do not enter to any great extent into the question. If he can read the English language only indifferently and can write, even with less facility, he is still eligible to enter the examination. I realize these simple requirements have been necessary in these earlier years to make it possible to adjust the license system upon existing conditions.

The embalmer is a development from the undertaker and the undertaker is next in line from the cabinet maker—a time-honored craftsman. The embalmer has not descended from the educated classes, but comes from the ranks of the ordinary tradesman. He has his business training, his intel-

Digitized by Google

lectual attainments. If we would fit a license system—apply an educational test—to his work, the standard must not be above him. These easy standards were necessary at the beginning, but it does not follow that they should be continued for the years to come. There is no good excuse for it. Some years have elapsed since the examinations for licenses were instituted. The older men have taken advantage of the simpler requirements to attain a license. A new set of men are coming on to serve our communities as embalmers, and, in their sphere, to serve as guardians of the public health. Possibly we have not stopped to think how fast these men are moving up to fill the ranks of embalmers. I believe the indications are that five years from now more than forty per cent will be added to the present ranks of embalmers, and in ten years fully seventy-five per cent of those now actively engaged in the work will be replaced by new men. I can see no good excuse for permitting these new men to perpetuate lower grades of work.

I hope I may not be considered as criticising what has been done. I realize thoroughly the good results which have come to the states by licensing embalmers, and I am greatly gratified with the honest efforts that have been made by the older embalmers to fit themselves to the new conditions and new opportunities. I am proud of the professional spirit that has been the impelling force to bring about this advancement. Professional zeal, however, is not enough. We must plan to secure better educated men in the candidates for licenses. Better material will come only because we make plans to develop it. The scope of our examinations is limited today because of these low requirements. So long as we make it possible for uneducated men (I mean men without a fair English education) to aspire to attain a license, so long must the grade of our examinations remain low.

The grade of examination intelligently cannot rank above the capacity of the weaker men allowed to pass. Like as a chain is not stronger than its weakest link, so the grade of a license in a state cannot be above the intellectual capacity of the weaker men allowed to hold a license. So long as the candidates for licenses in several states are from a similar class of men, and this class is one that it not well educated, the quality of the examinations cannot differ widely in grade. If our examining boards were also instructors, then there might be a marked difference because of the distinguished ability of some of the examiners. But since they, though examiners, can only be judges of the candidates presented, they must of necessity be limited to the material before them. We may persuade ourselves that our examinations are better than those of a sister state—they may be in methods—but if any one differed widely in intellectual requirements from those of a sister state it would easily be above the common material we have to examine.

It seems to me if these examining boards plan wisely for the future they will stand strongly in favor of the better qualifications in the men who ask for licenses. If I wished to be a lawyer, a physician, or take a course in engineering, I must have a good common English education before I can enter a school to prepare for these professions. Why is this? In order that

Digitized by Google

I may be able to read intelligently the literature of these professions and be able to comprehend the instructions that will be given in classes. You would not think very kindly of a man who wanted to be admitted to the bar if he had never read Blackstone or scarcely any of the other law literature.

The literature on embalming is not very extensive. A few books will cover the list and I am sure it is not unreasonable to ask that all the candidates shall be versed in these. If you will conduct a personal canvass among the licensed embalmers, as I have, I think you will be readily convinced that fully one fourth of the men do not possess books on embalming. They have not read the literature upon their work. Many of the men have gained their education on embalming from the association lectures and the trade papers, coupled with their personal experience. A comparatively few have taken advantage of the schools of embalming.

This simple education in embalming may prepare a man to preserve a cadaver, but it does not avail much in matters of disinfection. This is a very important part of our work. It is this question of disinfection that makes the license system of value to the public—a safeguard against the spread of disease. If you will make a canvass of the embalmers I think you will find that less than one half of these have read a book on disinfection. A study of the answers to your examination questions on disinfection will show you that the knowledge of many of the men on this subject is limited to memorized answers to published questions.

If we could bring you examiners into confessional I am sure you would admit that there have been before you within the past year young men asking for licenses who have never read a work on disinfection, other than the leaflets sent out by the Boards of Health. Some of them quite possibly were not well enough equipped in education to read such a work intelligently. To admit such men to the examinations may have been a necessity yesterday and to-day, but it is not a necessity tomorrow. I hope we will plan for better things.

I wish to say again that I do not call attention to these things to criticise what has been necessary to do to adjust the license system in the states. I only want to protest against perpetuating this condition. We cannot do it and command the respect of a thinking public.

The instructions sent out from the examining boards are in English. All our rules of transportation are in English. Still we permit men to secure licenses who cannot read English. We allow them to have interpreters. I do not protest against this for the older men who are established in business, but I want to raise my voice against the continuance of this custom. This is America. We are Americans. Of those who would serve our communities in public or semi-public relations, there is every argument in favor of asking that they should be sufficiently familiar with the English language to be able to read and write intelligently. No state in the nation is training men to practice in its courts in French or any tongue other than the Anglo-Saxon.

Digitized by Google

I hope this conference will advise and urge the embalming boards of the several states to provide in the near future that the men applying for a license shall have attained a certain grade of education in English. The public schools are open to all our people—they are free. Any boy may have their privileges and I hope it may be possible in the near future for only those who have completed a high school course to get a hearing before any embalming board. This cannot be done immediately, but a date ahead can be fixed upon (the year 1910, for instance), after which no applicant will be received who has not attained certain fixed English acquirements. I am not particular what method is used to bring this about, but I am anxious that the fact shall be attained. We need something more than professional spirit to push our examinations higher. We need a concerted action on the part of all the examining boards and a request from this body is the strongest lever I know of to lift us into better possibilities. We owe this to our communities to provide the better service from the embalmers which the higher standards will bring. We owe it to ourselves to defend and upbuild the honor of our profession.

ANNUAL REPORT OF THE LOCAL BOARD OF HEALTH: WHAT THE PEOPLE OUGHT TO KNOW.

By Hon. H. L. Stillson, Bennington.

To the People of Bennington:

The annual report of the health department as required by the statute is here respectfully submitted.

New Legislation.

The late Hon. George W. Harmon of Bennington used to remark biennially that no one knew what the amended Vermont statutes were until the session laws had been diligently studied, following each legislative meeting of the General Assembly. This sentiment is as true to-day as when it was uttered, with this difference: Then, the party involved was largely that of the profession of law; now, it involves as well the department of health; hence the necessity of incorporating, within the scope of this report of 1907, much of which follows. The changes, however, in the health laws are not so striking as in other lines, which is certainly a source of gratification to the executives called upon to enforce their conditions.

The Registration Law.

The necessity of a proper record of births, marriages and deaths, provided by Act No. 140, Laws of 1904, so that legal proofs might exist,

Digitized by Google

should occasion require it, was fully set forth in this report last year. In practice it comes to pass that heads of households are almost criminally (considering the heavy fines imposed) negligent in several respects. The attending or family physician is frequently not informed of the decease of his patient; especially should the disease prove to be a chronic malady. This is a grave oversight or negligence which will cause those guilty considerable trouble under the amended statute.

Two principal amendments were made: (No. 173 of the newspaper pamphlets), which provides a system that has always prevailed here, only changing the mode of payment, to be yearly on the town clerk's certificate and by the town treasurer instead of by the selectmen from time to time: and (No. 174), providing that residents of towns or cities who may die away from home, the town or city clerk of the place where the death occurred shall file a copy of the certificate of death in the town or city where deceased had a residence, thus completing the record. Hitherto in these instances no record was filed at the place of burial, save the transit or removal permit. This filing of the records also applies to births and marriages, but is not under the supervision of the health department. In practice the registration act of 1904, with its restrictions, penalties and provisions, remains the same as heretofore. The rule for report of still births is six months' gestation or upwards, which must be reported as births and deaths.

It is important to notice that the exact words of the published Act No. 173, Laws of 1906, are: "The fee for making reports of births and deaths shall be twenty-five cents each, to be paid by the town upon a statement by the clerk that the returns have been made in accordance with the provisions of this act," which is No. 140, Laws of 1904.

THE RULES OF QUARANTINE.

These rules, which someone has had enacted into law, pay a high compliment to Bennington, where, substantially, the same have been the universal practice for years. The thought first came from the medical profession of this town in 1893, and has been repeatedly suggested at the schools for health officers held annually at Burlington. Act No. 169, Laws of 1906, amends Section 17, Act No. 113, Laws of 1902, to read as follows:—

"SECTION 17. The head of a family in whose home there occurs a case of infectious or contagious disease, dangerous to the public health shall immediately give notice thereof to the local health officer of the town in which he lives. A physician who knows or suspects that a person whom he has been called to attend is sick or has died of a communicable disease dangerous to the public health shall immediately quarantine and report to the health officer the place where such case exists and the name, degree of virulence and cause or source of the disease, and such other facts relating thereto as may be necessary for the health officer to make examination and

Digitized by Google

act in the premises; provided that if the attending physician at the time of his first visit is unable to make a specific diagnosis, he may quarantine the premises temporarily and until a specific diagnosis is made, and post thereon a card upon which the word 'quarantine' shall be plainly written or printed. Such quarantine shall continue in force until the health officer examines and quarantines as is provided for in this act. A head of a family or physician who fails to give reasonable notice to the health officer of the existence of such disease shall be fined not more than fifty dollars nor less than ten dollars, with costs of prosecution."

As "all acts or parts of acts are hereby repealed," this is the present law of primary quarantine, and adds to the Bennington usage only the primary card with the word "quarantine." People will please note that this applies as well to children's (so-called) diseases of measles, whooping cough, German measles, mumps, chicken-pox, etc., as to the more dangerous (so-called) diseases of scarlet fever, diphtheria, membranous croup, typhoid fever, tuberculosis, pneumonia (lobar or croupous), erysipelas, leprosy, smallpox, etc.

DIPHTHERIA ANTITOXIN.

The *amazing* statement has been made in this state—however widely or restricted I have no means of knowing—during the past year, that there are children and adults suffering from paralysis who were made so from large doses of antitoxin, given to cure diphtheria. To be sure the disease was stayed, but what of it? The "amazement" lies in the fact that the lay mind does not appear to comprehend the fallacy of confounding the effects of diphtheria with the medicine which cures. Before antitoxin was used in Bennington five out of six patients died; and, in numerous instances, whole families were "wiped out." Moreover, this disease attacks adults as well as children and youth. With the general use of this specific, not only was the mortality reduced to almost nothing,—extending now over a period of ten years in Bennington,—but where, formerly, case after case of paralysis was present as a complication and motive cause of sudden death, with the use of antitoxin the instances of paralysis in diphtheria may be counted on the fingers of one hand in several hundred patients. These facts of our experience, during the past ten years, are those of the entire world, proved by thousands of cases of diphtheria, as will be verified by every pathologist of any reputation whatsoever. The reason for this is simple. Diphtheria is a toxin (poison), antitoxin is an antidote (specific). Stripped of all scientific verbiage the cause and cure are these: The action of the toxin in the blood of the person afflicted with diphtheria, immediately precipitates antitoxin in his circulation. Nature thus provides her own cure. The injection of antitoxin simply assists nature and effects a cure, where, otherwise, there would not be antitoxin enough, or ability to accumulate enough, to antidote the rapid poison, and the patient is "snatched from the very jaws of death." As well might one say the diphtheria pa-

Digitized by Google

tient was responsible for his own paralysis as that any dose of antitoxin should ever be held accountable!

Diphtheria is the same fatal disease it was before scientists differentiated the Klebs-Löffler bacillus and thus discovered an antidote to this terrible malady. The way the medical profession of Bennington have handled this disease, by the universal use of antitoxin, it is to be feared,—in the light of recent events,—has lulled the public to a fatal repose; for it is just as true today as it was ten or more years ago that the time to successfully doctor diphtheria is during the first twenty-four or forty-eight hours of the attack. It has been demonstrated over and over again, extending to hundreds of thousands of cases, that antitoxin is a harmless remedy. Will the people believe the evidence?

PURE FOOD STATUTES.

It becomes my duty to call the attention of all dealers in foodstuffs to the pure food regulations of Vermont, contained in Act No. 143, Laws of 1904, and as amended by Acts Nos. 175, 176, 182, 186, 137, and 150, Laws of 1906. During the spring of 1905, a copy of this pure food laws (No. 143, aforesaid) was mailed to every dealer in foods in Bennington, including the markets; and to peddlers of meats and milk, so that no one can plead ignorance of the restrictions imposed under very severe penalties. The amendments of 1906 largely include the addition of drugs and medicines, with an *appropriation* to enforce the statute.

RELATING TO FIRE ESCAPES.

Act No. 137, Laws of 1904, being amended sections and additions to Act No. 113, Laws of 1902 (Sec. 4), places the regulation of fire escapes within the powers of the State Board of Health, and defines the term "public buildings," Acts No. 171, Laws of 1906, in amendment of Section 4701 of the Vermont Statutes, appears to give the state's attorney the power to approve such measures, and to file his report with the county clerk. This amendment to said Section 4701 does not repeal anything, so both statutes seem to be in effect.

PREVENTABLE DISEASES.

Included in this classification are the so-called children's diseases of measles, whooping cough, mumps, chicken-pox, and German measles. The regulations provide "modified quarantine" for each of these. As this kind of quarantine does not appear to be as well understood as that of full quarantine, the regulations are here copied: "To
cases of having been reported in your family, you are hereby forbidden to allow any member of your family who cannot be shown to have had the above mentioned disease to attend any school, public,

Digitized by Google

parochial or private, or any gathering in any church or place of public amusement." This carries the same penalty as is provided in the extract from "the rules of quarantine."

Notwithstanding these regulations have been in force several years, public opinion, even in this progressive and up-to-date town, does not demand their full enforcement. This is likewise true of all the towns about us. The two parties to the subject—the family and the neighbors—do not consider that right here is where the public has a right to intervene with an emphatic, "Remember me." For, were the same pains taken to "stamp out" the diseases in question that are invoked to stop those more malignant, soon there would be no measles, etc., against which to guard. Again, considering the great mortality latterly attending epidemics of children's diseases, the expenses entailed on the parents, they are frequently becoming a public charge; and, incidentally they are sure to be the households who keep going what are called the preventable diseases. Children who die of measles and whooping cough have the same right to live as those who survive,—to say nothing of the loss to the State because of someone's criminal negligence in exposing them to a preventable ailment. How preventable? says some one.

Col. A. K. McClure recently said, at a dinner of the Clover Club in Philadelphia, Andrew Carnegie once stated to me he would give $200,000,000 for an assurance of ten years' longer lease of life. To which a metropolitan daily remarked: "How many Pasteur Institutes (with its discoveries of antitoxins, etc.) would $200,000,000 found? Do not wealthy men know that scientific study of the problem of death is hardly a decade old, and is being prosecuted by an endowed institution which has done more in alleviating human ills during their lifetime than had been accomplished in centuries of medical investigation? . . . . Authentic cases are known of men and women who lived to one hundred and fifty years and more. When the life of insects has been prolonged, by the experiments of the laboratory, to thrice their natural term, may not science prolong the life of men to thrice three-score years and ten? . . . The experiments have but just begun, and it is too early to say how revolutionary their results may be." Should these promises become a fact, all would be nullified were not the people educated up to the standard of safety, and rigidly held to the sequestration of contagious or infectious diseases of whatever name or nature. Fourteen years has seen great progress in this regard in Bennington, and twenty-five years more will witness much greater results. The *restrictions* and the *inspections* will grow apace as well.

NEW RULES FOR AUTOPSIES.

The Legislature of 1906, instead of amending a section of the Vermont Statutes relating to autopsies, took as its basis for change Act No. 90, Laws of 1900, which had been a subject of radical amendment in 1902, and again in 1904. Section 4, Act No. 90, Laws of 1900, was given a resurrection to

Digitized by Google

provide that in cases where a person was found dead, and *criminality suspected,* the state's attorney shall request the autopsy, which shall be performed by an expert connected with the Laboratory of Hygiene. The section of the Vermont Statutes which provides that the selectmen may order an inquest (which includes an autopsy), where the body is found lying out in the town; and Section 9 of Act No. 140, Laws of 1904, which stipulates the notice to the health officer, remain the same as heretofore. The Act No. 172, Laws of 1906, repeals only Act No. 115, Laws of 1898, all of which relate to the Vermont Laboratory of Hygiene. Reports of deaths, where a physician did not attend, should, therefore, be made to the health officer.

ANTI-SPITTING LAW.

It is just possible that the abominable nuisance of spitting on the lower floor from the gallery of Free Library Hall will now be abated. Sections 1 and 2, Act No. 187, Laws of 1906, provide:

"SECTION 1. A person who expectorates on a public sidewalk or in a public building except in receptacles provided for that purpose shall be fined not more than ten dollars for each offense.

"SEC. 2. A suitable notice containing a copy of this act shall be posted in all public buildings."

INSPECTION OF IMPORTED FOODS.

The work of enforcing the National Pure Food Act at the ports where foreign importations are inspected is described by R. E. Doolittle in the following extract from a paper read at the annual convention of State and National Food and Dairy Departments, in July last:—

"By the act under which we now operate, which is the Appropriation Act of June 30, 1906, 'The Secretary of Agriculture, whenever he has reason to believe such articles (foods, drugs, beverages, condiments and ingredients of such articles) are being imported from foreign countries which are dangerous to the health of the people of the United States, or which shall be falsely labeled or branded, either as to their contents or as to the place of their manufacture or production, shall make a request upon the Secretary of the Treasury for samples from original packages of such articles for inspection and analysis, and the Secretary of the Treasury is hereby authorized to open such original packages and deliver specimens to the Secretary of Agriculture for the purpose mentioned, giving notice to the owner or consignee of such articles, who may be present and have the right to introduce testimony; and the Secretary of the Treasury shall refuse

Digitized by Google

delivery to the consignee of any such goods which the Secretary of Agriculture reports to him have been inspected and analyzed and found to be dangerous to health or falsely labeled or branded either as to their contents or as to the place of their manufacture or production, or which are forbidden entry or to be sold, or are restricted in sale in the countries in which they are made or from which they are exported." (Section of Appropriation Act of June 30, 1906.)

"As is expressed in the language of the act, the inspection of imported food products covers the following items:—

"(1) To ascertain whether or not the products are injurious to health. By decision of the Secretary of Agriculture of August 6, 1904, a product is deemed injurious to health, first, if any substance, with the exception of the long used, well known condimental substances, viz., common salt, spices, sugar, wood smoke and vinegar, be added thereto for preserving, coloring or other purposes, which is injurious to health, either as determined by actual experimental evidence or in the predominating opinion of health officers, hygienists, and physiological chemists; and second, if the product be decomposed, filthy, decayed or in any unfit condition for human consumption.

"(2) The second item covered by the inspection is to ascertain whether or not the products are falsely branded or labeled; first, in regard to the contents of the package, and second, as to place of manufacture or production.

"By the regulations issued by the Secretary of Agriculture food products are held misbranded:—

"(a) If any false name or property be assigned thereto in the label directly or by implication.

"(b) If any false statement be contained in the label relating to the place of manufacture or production of the contents of the package, directly or by implication.

"(c) If they be not of the nature, substance and quality commonly associated with the name under which they are sold or offered for sale.

(3) The third point covered by the inspection of imported food products is to ascertain whether or not they are forbidden entry to or are restricted in sale in the country in which they are made or from which they are exported. The Food Inspection Act expressly forbids entry into the United States of any products that are forbidden entry in the country where they are manufactured or from which they are exported. It also prohibits entry into this country of products which are forbidden to be sold or are restricted in sale in the countries in which they are manufactured or from which they are exported.

"To convey a proper idea of the manner in which the food inspection is carried on it is necessary to refer to some practices of the customs service. Both the Department of Agriculture and the Treasury Department are concerned in the execution of the Imported Food Inspection Act. In fact, the

Digitized by Google

Secretary of the Treasury is the administrative officer. Shipments of merchandise are always in the custody of the Treasury Department and samples are taken and delivered for inspection and analysis by the Secretary of the Treasury upon request of the Secretary of Agriculture; furthermore, the Secretary of the Treasury, upon request of the Secretary of Agriculture, refuses the admission of products found adulterated within the law. Thus both departments are interested throughout the work.

"In the execution of the regular customs law it is required that within forty-eight hours after a vessel makes entry at a port in this country all consignees of merchandise in that vessel shall make entry and shall present at the Custom House a copy of the consular invoice covering their respective shipments of goods. An invoice, as you probably know, is simply a list containing the items of merchandise, together with the prices and all items of expense, certified before the United States consular officer of the country from which the goods are exported. From this invoice the duty is quickly estimated and the amount paid at once by the consignee of the goods. Permits are issued in most cases for removal from the dock of all goods except Public Store cases, a bond for twice their value being given to protect the government and secure the return of the goods should occasion demand. At least one case in every ten of each line of case goods is sent to the Appraiser's Stores for the fixing of values. The invoice is also sent to the Public Stores and after proper recording it reaches the examiner. It is while the invoice is in the hands of the examiner that the inspection is made by the Department of Agriculture under the Food Inspection Act. I may say that during the first year of the existence of the imported food law all work was done by the Bureau of Chemistry at its Washington office. Arrangements were made with the Department of State whereby copies of all invoices of food products were sent direct to the bureau by the American consular officers of the different countries, but the delay occasioned by the transmission of samples and correspondence so inconvenienced the importers and the customs officials that it was decided to try the plan of having laboratories at the principal ports of entry. The first port laboratory was opened in the Appraiser's Stores in the city of New York, September 6, 1904. This was found to greatly facilitate the inspection work and as a result of the experience at that port, five more laboratories were opened last year in the Appraiser's Stores of the following cities: Boston, Philadelphia, Chicago, New Orleans and San Francisco. Shipments arriving at ports at which there is no laboratory are still inspected at the Bureau of Chemistry by means of the copies of invoices sent by the consular officers. At the port laboratories the inspection is made by the examination of the regular invoice entered for appraisement purposes when this invoice is in the possession of the examiner of the merchandise. The inspecting officer of the Department of Agriculture visits the various examiners having the appraisement of food products where all invoices are open for his inspection. No invoice containing an item of food product is permitted to be returned

Digitized by Google

by an examiner until it has been inspected by the inspecting officer of the Department of Agriculture. If, on examining an invoice, the inspector finds no article which he desires sampled or further inspected, he stamps the invoice, 'No Sample Desired by Department of Agriculture.' An invoice thus stamped may be returned or passed to another examiner without further detention. If, however, a sample is desired, there is attached to the invoice a small tag describing the particular case from which a sample is wanted. It is then the duty of the examiner to procure this sample and forward it at once to the laboratory of the department and also to notify the consignee of the goods that a sample has been taken for inspection purposes and that he should hold intact the remainder of the shipment until the examination is completed and he receives further notice from the Department of Agriculture. Often when inspecting an invoice the inspector is unable to decide until he can see the goods whether or not a sample should be requested. Take for instance the question of labels. Repeated analysis of certain lines of merchandise inform an inspector as to their composition, and it then becomes a question of inspection of labels, with occasional complete examination and analysis of the new brands and grades that appear from time to time. As an example of this line of goods we have the French peas in which sulphate of copper is used to give the green color. Pending experiments which are now being made, the Secretary of Agriculture has decided that such products may be admitted provided the label plainly states that they are 'Colored (or Prepared) With Sulphate of Copper.' The inspecting officer, therefore, having at hand an invoice covering a consignment of French or Belgium peas, has but to determine in most instances whether or not the label bears this notification of the presence of copper. To provide for this form of inspection it has been arranged that by attaching a detention slip to an invoice the inspector's attention will be called to the Public Store cases covered by that invoice when they are opened for appraisement by the examiner of customs. Of course, any or all cases may be ordered to Public Stores, though in general, as I stated before, one case in every ten of each different line of products is ordered to Public Stores at the time entry is made. The inspector, when making his visits to the examiner, makes what we call the floor inspection. He looks over the contents of the various Public Stores cases, and where goods are found properly labeled according to the results of previous analyses, he releases them by stamping the invoice in the usual manner. Should a case be found not properly labeled or from which he desires samples for any other purpose, the detention is made and sample requested in the regular way. What has been said of the peas and beans applies, of course, to many other lines of products. This form of inspection greatly facilitates the work by lessening the number of samples sent to the laboratory for analysis. In fact, it would be impossible at a port like New York with the small force available under the appropriation Congress has made for food inspection work, to analyze samples from all shipments of scarcely any one line of products. The floor

Digitized by Google

inspection becomes more and more important as new lines of work are covered and the manufacturer and importer learn the requirements of the law and govern their products accordingly. At the port of New York we have not been able as yet to cover nearly all of the different lines of food products. To one not acquainted with the Customs service it is hard to appreciate the volume of merchandise that passes through a port like New York. About 75 per cent of all the products brought into this country passes through that port. Probably an average of over 10,000 invoices of food products alone are entered every month of the busy season, which extends from the first of September to about the first of May. I have seen invoices of wines on which the duty alone amounted to over $5,000. I speak of this that you may gain some idea of the extent of the inspection work and perhaps better appreciate the difficulties that naturally arise from the execution of a law that involves so great and varied interests. It is necessary to provide in every detail of the food inspection work that there shall be no conflict with the customs service or delay in the handling of the merchandise, otherwise the work of the port would be blocked in a very short time. When steps were first taken to inaugurate the inspection work there was great fear among some of the Customs officials that the whole Customs service would be disrupted, and Dr. Wiley and Dr. Bigelow could give a very interesting account of the many difficulties encountered and overcome before the work was gotten under way. The department adopted the policy of taking up only a few lines of products that could be well handled and making the inspection complete in every respect along the line under the examination. Of course, at any time and without notice one line of products may be discontinued and another taken up, although a line of products that has once been thoroughly covered is never afterward entirely dropped, as the floor inspection and occasional analyses of suspected samples serve to keep them under proper control. The port laboratories receive direct from the consular officers of the different countries copies of all invoices covering food products entering that port. This copy of the invoice is accompanied by a declaration of the shipper as to the place where the products are grown and manufactured and the presence or absence of preservatives, coloring matter or other added substances. The examination of these invoices assists in keeping the inspector informed as to the character of the goods entering the port.

"To return more particularly to the details of the system of inspection. If a sample be requested from a shipment of merchandise by the inspector of the Department of Agriculture it becomes the duty of the Customs examiner to obtain the said sample and deliver the same to the port laboratory. There the necessary examination is made and if found pure the consignee is notified that the examination has been completed and that the shipment represented by same will not be further detained by the Department of Agriculture. If a sample is found adulterated within the meaning of the law the Collector of Customs is requested to secure actual custody of the

Digitized by Google

goods and the importer is notified of the finding of the examination and a time set at which he may be present and introduce testimony regarding the case at hand. In the meantime a report of the findings of the port laboratory, together with a sample of the merchandise, are sent to the Bureau of Chemistry at Washington for verification. The evidence introduced by the importer, the declaration of the shipper, the laboratory results, in fact all matters relating to or bearing on the case are taken into consideration in making the final decision. If it be decided that the goods are entitled to entry the Collector of Customs for the port is notified accordingly and requested to release the shipment under whatever restrictions may be decided upon. If it be decided that the goods are not entitled to entry the Collector of Customs is so notified that he is requested to secure their reshipment beyond the limits of the United States. No penalty is imposed for bringing adulterated goods into the United States. The loss of the goods and the expense incurred in securing their reshipment has been found to be quite as effective in enforcing the provisions of the law.

"The enforcement of the food inspection law has produced a marked change in the character of the products brought into this country. At New York we have made a thorough inspection of the following lines of products: Vinegars, jellies, jams and fruit preserves, canned vegetables, tinned and potted meats, fish in olive oil, olive oil itself, and egg products. Considerable has also been done or is under way in the following lines: Macaroni, chocolates and cocoas, non-alcoholic beverages, and certain lines of spices and condiments. As a result of the inspection of these lines of products many importers are bringing in a much better grade of products, the use of adulterants being discontinued altogether. Officers have made no change in the quality of the products, but have altered their labels in manner necessary to correctly inform the purchaser of the exact character of the product.

"It is not necessary for me to enumerate the adulterants found in the different products in the course of our work. Suffice it to say that in general they were the same as commonly used in domestic goods. So-called 'pure wine vinegar' was found in some instances to be the ordinary distilled product colored with caramel. Jellies, jams and preserves often contained glucose and salicylic acid. Sardines bearing the impressive label, 'packed in pure olive oil' were found to be packed in a mixture of oils of which cottonseed formed the main portion, though more often peanut oil and sesame were used. A product not so commonly met with in the state food control work and with which we had considerable experience was what was known as liquid egg. Liquid egg is simply the whole egg after the removal of the shell. Soon after the laboratory at New York was established it was discovered that thousands of cases of this product were being entered at that port each year and that it was preserved with from three per cent to five per cent of borax. One shipment was found which was preserved with fluorides. The product came mostly from China and was

Digitized by Google

used by the large restaurants and bakeries of this country. I understand it has also been used or at least experimented with in the manufacture of oleomargarine. By a decision of the Secretary of Agriculture all products of this class were prohibited entry on and after December 15, 1904. Attempts have since been made to bring it in in a frozen condition, but this was not a success and the plan was soon abandoned.

"Of course, the port inspection work has but nicely begun. There are many and important lines which have not as yet been touched upon. Every few days important matters come to the attention of the department that demand thorough investigation before the real inspection work can be commenced. In fact, there is always a certain amount of investigation to be done before any new line of inspection can be taken up. The work of the port laboratory is by no means confined to the analysis of samples from shipments inspected. Research on composition of certain products, detection of adulterants and methods of analysis must be kept constantly under way. Much, however, is being accomplished and with the growth of the work and the coöperation that will come from the enforcement of the national food law it is hoped that better and greater results will accompany the work in the future."

Digitized by Google

BULLETIN OF THE

VERMONT STATE BOARD OF HEALTH.

Volume VII. No. 3.

Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

To Physicians.—The State Board of Health would call the attention of all physicians to the importance of exercising the greatest care in filling out the Birth and Death Certificates and the prompt returning of the same, as the law requires. Every question should be answered. Particular attention should be given to stating correctly the cause of death, especially to writing it plainly, remembering that the town clerks are not familiar with the technical names; that they are required to copy the certificates on to abstract blanks, which are sent to the secretary of the State Board, the original certificates remaining in the clerk's office as a permanent record of the town. The secretary has to make a copy for the Census Bureau in Washington. The Chief Statistician will not accept indefinite causes of death, hence do not give as cause of death "heart failure," "marasmus," "debility," "old age," "malnutrition," "acute indigestion," "convulsions," but give the causes that led up to these conditions. In case of cancer or tuberculosis, give the organ or part of the body affected. In case of deaths evidently the result of accident or suicide, state nature of accident or mode of suicide, in order that they may be correctly classified.

To Health Officers.—The attention of health officers is called to the necessity of exercising greater care in receiving death certificates before giving burial permits. Copies of these certificates have to be sent to the Census Bureau, Washington, and they will not recognize causes sometimes given, such as "heart failure," "marasmus," "debility," "old age," "malnutrition," and "convulsions." Neither will they accept "cancer" and "tuberculosis," unless the organ or part of the body affected is given. "Accident" and "suicide" are also unsatisfactory, unless the form of accident and the mode of suicide are distinctly stated. Hence you should see that all unsatisfactory

Digitized by Google

causes are eliminated and correct and complete ones substituted before giving the burial permits. In cases where it is otherwise impossible to define the cause of death, an autopsy should be made to determine such cause.

To Town Clerks.—Your attention is called to the necessity of greater care in the matter of certificates of the vital statistics of your town. Be sure that all questions in each blank are answered. See Sections 8 and 9, No. 140 of the Laws of 1904. If the person or officers mentioned in these sections, who are required to make returns to your office, fail to do so, call their attention to the above sections and to No. 190 of the Laws of 1906. If they fail to heed your request, call the attention of the state's attorney to their neglect of duty. It is of great importance that these returns should be made promptly each six months, as is provided in Section 1, of No. 140, Laws of 1904.

To Town Clerks:—The attention of town clerks is called to the fact that the time for reporting the vital statistics, as provided by law, for the last half of 1906, expired with February 28. Those who have failed to do so will please report at once.

Pineapples a Very Valuable Digestive.—The word enzyme does not appear to have any connection with pineapple, yet it is the name of the chemical that gives to the luscious fruit the remarkably digestive property which it possesses, says an exchange. The prevailing notion that pineapple juice is excellent for the digestion is supported by medical testimony. Eat a slice of the fruit after dinner, say the doctors, and you will not suffer with dyspepsia.

If you want to see what pineapple can accomplish in the way of digestion, you can easily test it on a piece of raw steak. The action of pineapple juice on meat is to transform it into jelly and then dissolve it when in the human stomach.

Place a slice of the fruit on the raw meat as it lies on a plate, and the upper surface on the steak where the fruit touches it will soon become gelatinous. Enzyme, the active principle of the juice, can be obtained by throwing salt into the juice, thus producing a precipitate.

A good sized pineapple contains two pints of juice, a fact that gives an idea of what a slice of the fruit will do for digestion. If cooked the pineapple loses its virtue in this respect. It may be asked whether the consumption of the somewhat woody fruit itself is beneficial or not, for that can scarcely be easily digestible.

Without doubt it is the juice which does the good, not the flesh of the pineapple, but the property of the juice is so effective that the eating of the fruit itself can do no harm and may even be beneficial, inasmuch as it takes some of the strength of the juice to dissolve it and so prevents the stomach suffering from the too violent effects of the juice.

Digitized by Google

Apples as Food.—Few people appreciate apples. No fruit is more wholesome. To use them freely both cooked and uncooked, is a sure method of keeping down doctor bills, and an excellent preventive against, and possible cure for indigestion, neuralgia, rheumatism, etc.

Although apples are high-priced and scarce in the cities, due to the intervention of exploiters between the producers and consumers, in the country they are plentiful. You know, of course, that they may be stored in barrels. But they may also be canned for winter use. A good, firm, slightly underripe apple may be pared, quartered and cooked very slowly on the back of the stove for two hours, when it will be found that the apples are thoroughly cooked, while the quarters are still firm enough to be placed carefully in glass jars, the juice poured over and sealed up. They look as nice as peaches, and are just as good. With less careful handling and less careful selection of fruit, a good sauce may be canned, also, for winter use. There is no nicer sauce than that made from apples. There is very little trouble about keeping fruit of this sort.

Chew Your Food.—You say you do chew your food, but unless you are vastly different from the majority of people you don't do anything of the kind. You come about as near bolting it whole as you comfortably can. That lets your teeth and jaws out of the duty they were made to perform, and throws the burden upon the stomach, which was never made to do such work.

The theory of the new fad is that you should make a point of chewing your food until there is nothing left to chew. Then you will get the real taste of your food, you will enjoy it twice as much, and your stomach, with an easy task before it, will put you into a glow of well-being and physical comfort. The digestive tract will be so happy over the new experience that it will make your whole system sing with joy, and you will not only get twice as much pleasure out of eating, but twice as much nourishment. And after all, though many forget it, strength and nourishment are what you eat for, not to satisfy hunger. Hunger is merely the animal instinct that tells you when it is time to store up more nourishment.

The fad has become pretty widespread under the leadership of one Fletcher, who has given his name to it, and you will note in many eating places sober gentlemen solemnly chewing away for dear life. They are advocates of Fletcherism.

Irving Fisher, a Yale professor of political economy, has just published the results of some experiments made with nine Yale students beginning in January and lasting about five months. The purpose of the experiments was to show whether thorough mastication of food increased its nutritive efficiency, especially its strength-producing efficiency.

The test was a vindication of Fletcherism. The students continued to lead their accustomed lives, mostly sedentary, and they made no particular change in diet, eating what they relished. But what they ate they chewed. They chewed it until it could n't be chewed any more. They found in this

Digitized by Google

method increased enjoyment for the palate, and vastly improved digestion. Furthermore, they found that they ate less, because they got more out of what they did eat than they did when they were bolting food nearly whole, and they needed less, therefore. In June they had, entirely through preference, reduced their consumption of meat to one sixth of what they had at first thought necessary. They were increased 50 per cent in their powers of endurance, and were able to do twice as much physical work, as shown by the gymnasium tests, as they could do in January.

This method of getting health and strength is sensible. It is cheap. Try it.

NOTICE.

Brattleboro, January 4, 1907.

To All Officers Having to Do With Cases of Suspicious Death and to Undertakers:

Your attention is called to Act No. 172 of the Acts of 1906, which takes effect February 1, 1907, Section two of which provides:

"SECTION 2. If a Judge of the Supreme Court or the Attorney General orders an autopsy on the body of a person, as provided by Section 1984 of the Vermont Statutes, he shall therein direct that such autopsy shall be made by the Pathologist of the Laboratory of Hygiene (at Burlington), or under his direction, unless for good cause shown such Judge or the Attorney General otherwise directs."

Therefore, in case of any suspicious death coming to your attention or within your jurisdiction, you will please at once communicate with the State's Attorney of your County, giving the facts, or, if he cannot be reached, communicate with the Attorney General, and you will see that in the meantime the body is not mutilated or disturbed, except to be taken to and kept in a proper and safe place, and particularly that nothing is injected into the body. The State's Attorney or the Attorney General upon receiving notice from you will further direct you.

The attention of undertakers is particularly called to Sections five and six of Act No. 118 of the Acts of 1902, which read:

"Section 5. No person shall embalm the body of any person that has died from an unknown cause, or, if a criminal cause is suspected, until after a legal investigation has determined the facts.

"SECTION 6. Any person who violates any of the provisions of this Act shall be deemed guilty of a misdemeanor and upon conviction thereof, shall be fined not more than fifty dollars nor less than ten dollars for each offence."

Complication has arisen in several instances in the last two years by reason of embalming fluid being injected into a body before the legal investigation was concluded. Therefore, prosecuting officers will see that the above provisions of law are strictly enforced.

CLARKE C. FITTS, Attorney General.

Digitized by Google

The following is significant as illustrating the conundrums which the compiler of vital statistics has to solve. This is usually done by consigning the report to the indefinite column.

He Died Anyhow.—This was the way a native physician in India filled out a death certificate: "I am of a mind that he died (or lost his life) for want of foodings or on account of starvation. Maybe also for other things for comfortables, and most probably he died by drowning.

Dr. L. P. Sprague, of Randolph, Vt., has been engaged to serve in the capacity of assistant chemist at the Laboratory of Hygiene, thus increasing the force there by one.

Dr. Sprague brings to this position not only his professional training, but considerable experience in laboratory work acquired in the Bureau of Plant Pathology at Washington, with the Rhode Island Experiment Station, and also as assistant in the Bacteriological Laboratory at the University of Vermont, both in its medical and academical departments.

His work will be largely in the food department; work in this line, under the amended pure food law, will be pushed during the coming year. The state authorities will work in conjunction with the national officials in enforcing pure food legislation.

Tonsilitis Versus Diphtheria.—Great care should be taken in the diagnosis of the inflammatory affections of the throat. It has occurred more frequently than it should, that persons with mild cases of sore throat have continued to attend to their varied duties, mingling with others on the street, or in school or other places where people congregate. During all this time they have not consulted a physician, consequently have innocently been spreading the germs of diphtheria. Other cases have come under the observation of a physician, but have been dismissed with a diagnosis of "tonsilitis," and a gargle prescribed. These cases have led to fatal cases of diphtheria. A culture taken from some of the mild cases of "tonsilitis" have shown the presence of specific bacilli of diphtheria. Every case of sore throat should be submitted to a physician and a careful and thorough examination made, a culture taken and sent to the Laboratory of Hygiene at Burlington to determine if there are germs that will render the case likely to infect others. The Laboratory is at the service of the people of the state for this purpose. If a doctor does not avail himself of this aid in diagnosis of these cases, he is not giving the patient who has given him his confidence the best service that he can, nor the service that the patient has a right to demand. Several epidemics of diphtheria have occurred with disastrous results, by reason of an erroneous diagnosis, which could have been prevented by the physician giving the patient the benefit of the doubt, taking a culture and thus making a positive diagnosis.

Digitized by Google

REPORT OF EXAMINATIONS AT THE LABORATORY FOR THE THREE MONTHS ENDING FEBRUARY 28, 1907.

MILK ABOVE STANDARD

Lab. No.	Date	Dealer	Town	Total Solids	Solids not Fat	Fat	Microscopical	Remarks
44274	.....	G. O. Hale (Pembroke milk)	Montpelier	12.09	8.6	3.4	Normal	.....
44275	.....	B. Marvin (Cloverdale baby milk)	Montpelier	13.64	8.5	4.9	"	.....
44589	.....	H. B. Chittenden & Son	Burlington	13.28	8.6	4 6	"	.....
44686	.....	R. A. Warner	St. Albans	13.05	8.8	4.2	"	.....
44687	.....	J. W. Warner	"	17.50	8.5	9.0	"	.....
44689	.....	F. O. Jackson	"	13.76	8.7	5.0	"	.....
44690	.....	E. H. Brooks	"	12.60	9.2	3.4	"	.....
44949	.....	Submitted by C. V. R. R.	"	.....	...	43.2	"	Cream
44973	.....	Submitted by C. V. R. R.	"	.....	...	18.45	"	"
45002	.....	H. H. Wheeler	Burlington	13.30	8.9	4.4	"	.....
45013	.....	E. Warner	St. Albans	16.13	9.7	6.4	"	.....
45245	.....	R. C. Mead estate	Proctor	13.05	8.8	4.2	"	.....
45342	.....	Smith	Burlington	12.69	8.8	3.9	"	.....
45720	1-17-07	G. R. Sanboun	New Haven	13.78	8 9	4.8	"	.....
45751	1-19-07	G. C. Willard	Barre	14.27	9.3	5.0	"	.....
45962	1-24-07	O. N. Warner	St. Albans	14.98	8.9	6.0	"	.....
45963	1-24-07	E. H. Brooks	"	14.0:	9.0	5.0	"	.....
45964	1-24-07	R. A. Warner	"	17.70	8.9	8.8	"	.....
46006	1-26-07	A. G. Rice	Bellows Falls	13.18	9.0	4.1	"	.....
46007	1-26-07	A. G. Rice	"	14.99	9.1	5.8	"	.....
46060	1-26-07	James G. Downing	Burlington	13.06	9.0	4.0	"	.....
46061	1-26-07	T. P. Welch	"	13.31	9.1	4.2	"	.....
46059	1-27-07	R. O. Smith	"	14 51	9 3	5.2	"	.....
46014	1-27-07	D. J. Millhan	"	13.31	9.1	4.2	"	.....
46045	1-27-07	H. B. Chittenden & Son	"	13.18	8.8	4 3	"	.....
46052	1-27-07	Steele & Butler	"	13.01	8.6	4.4	"	.....
46053	1-27-07	C. C. Bliss	"	14.51	9.3	5.2	"	.....
46040	1-26-07	W. Suckstorff	"	12.81	8.8	4.0	"	.....
46061	1-26-07	O. H. & A N. Buck	"	13.33	9.3	4.0	"	.....
46128	1-30-07	Rice Bros.	Bennington.	.....	...	39.6	"	Cream
46126	1-30-07	Philip Jacobs	"	13.54	9.0	4.5	"	.....
46127	1-30-07	G. B. Parson	"	13.80	9.3	4.6	"	.....
46209	2- 2-07	Chas. Ladabauch	Proctor	13.79	9.1	4.6	"	.....
46396	2- 4-07	T. G. Hart	Rutland	12.93	8.8	4.1	"	.....

Digitized by Google

MILK BELOW STANDARD, EXAMINED DURING DECEMBER, JANUARY AND FEBRUARY.

Lab. No.	Date.	Dealer.	Town.	Total Solids.	Solids Not Fat.	Fat.	Microscopical.	Remarks.
44252	.....	Rutland Creamery Co.	Rutland	10.07	6.4	3.6	.....	Contains Added Water
44273	.....	W. D. Walker	Montpelier	12.80	8.7	4.2	Dirt	.....
44281	.....	R. A. Warner	St. Albans	14.51	9.3	5.2	"	.....
44453	.....	Baker & Tupper	Burlington	13.31	9.1	4.2	" (very bad)	.....
44688	.....	E. Warner	St. Albans	13.28	8.6	4.6	"	.....
44927	.....	Submitted by C. V. R. R. Co.	"	.....	.....	19.8	"	Cream
44992	.....	R. C. Mead Estate	Proctor	12.56	8.5	4.05	"	.....
45014	.....	K. McGrath	St. Albans	15.24	9.4	5.8	"	.....
45944	.....	R. Bruce	Proctor	11.60	8.4	3.2	Normal	.....
45946	.....	Chas Laderouche	"	12.08	8.5	3.6	Dirt	.....
45947	.....	E. Myatt	"	12.33	8.7	3.6	"	.....
45948	.....	J. A. Blanchard	"	11.95	8.2	3.7	"	.....
45710	1-16-07	.....	Windsor	11.84	7.9	3.4	Normal	.....
45684	1-16-07	W. H. Bradford	Bennington	13.00	9.0	4.0	Pus and Streptococci	Dirty
45960	1-24-07	E. Warner	St. Albans	12.81	8.8	4.0	Normal	"
45938	1-24-07	J. W. Campbell	"	14.04	9.4	4.6	"	"
45957	1-24-07	H. V. Jackson	"	14.04	9.4	4.6	"	"
45931	1-24-07	H. C. Blake	"	11.86	8.8	3.0	"	"
45959	1-24-07	K. McGrath	"	19.90	10.1	9 8	"	"
46005	1-26-07	A. G. Rice	Bellows Falls	12.54	8.1	4.4	"	"
46081	1-28-07	H. H. Wheeler	Burlington	12.56	8.5	4.0	"	"
46029	1-26-07	H. Gladstone	"	14.39	9.2	5.1	"	"
46034	1-26-07	F. L. Murray	"	13.31	9.1	4.2	"	"
46036	1-26-07	Geo. Saiger	"	13 52	8.7	4.8	"	"
46048	1-27-07	J. E. Maynard	"	12.32	8.6	3.7	"	"
46054	1-27-07	H A. Bixby	"	13.44	9.3	4.1	"	"
46038	1-26-07	Charles Bettes	"	13.04	8.6	4.4	"	"
46035	1-26-07	S. Miller	"	11.62	8.8	2.8	"	"
46032	1-26-07	L. Alfred	"	11.84	8.4	3.4	"	"
46037	1-26-07	F. X. Budo	"	12.33	8.7	3.6	"	"
46033	1-26-07	Dennis Bourne	"	11.47	8.2	3.2	"	"
46055	1-27-07	Thomas Ryan	"	12.70	9.0	3.7	"	"
46050	1-27-07	E. Goodrich	"	13.16	8.6	4.5	"	"
46042	1-27-07	Chase Bros	"	12.32	8.5	3.8	"	"
46057	1-27-07	Chase Bros.	"	12.46	8.9	3.5	"	"
46039	1-27-07	J. B. Ritchie	"	13.54	8.9	4.6	"	"
46041	1-27-07	Baker & Tupper	"	13.40	8.7	4.7	"	"
46058	1-27-07	C. K. Tyler	"	13.42	8.9	4.5	"	"
46060	1-27-07	E. J. Viens	"	12.57	8.7	3.8	"	"
46056	1-27-07	O. E. Barber	"	13.03	8.8	4.2	"	"
46124	1-30-07	F. A. Greenslat	Bennington	12.43	8.4	4.0	"	"
46125	1-30-07	L. F. Rudd	"	14.15	9.3	4.8	"	"
46126	1-30-07	W. E. Mattison	"	14.90	8.7	6.2	"	"
46127	1-30-07	C. H. Mattison	"	13.54	9.0	4.5	Pus	"
46128	1-30-07	Martin Cone	"	13.06	9.0	4.0	"	.....
46129	1-30-07	R. A. Crawford	"	13.67	9.2	4.4	Normal	"
46130	1-30-07	Lyman Van Santwood	"	13.44	9.3	4.1	"	"
46131	1-30-07	J. C. Colgate	"	15.00	9.0	6.0	Pus and Streptococci	.....
46133	1-30-07	W. J. Hicks	"	13.32	9.3	4.0	Normal	"
46134	1-30-07	J. W. Rockwood	"	12.20	8.6	3.6	"	"
46135	1-30-07	F. E. Moon	"	13.65	8.8	4.8	"	"
46138	1-30-07	W. C. Robinson	"	10.88	7.4	3.4	"	Dirty Watered
46139	1-30-07	Hiland Fay & Son	"	13.00	8.9	4.1	"	Dirty
46177	2-1-07	C. P. Ames	Manchester	12.92	8.7	4.2	"	
46178	2-1-07	R. T. Lincoln	"	13.90	9.0	4.9	"	"
46179	2-1-07	W. H. Benedict	"	12.68	8.6	4.0	"	"
46180	2-1-07	A. F. Smith	"	13.43	9.1	4.3	"	"

Digitized by Google

MILK BELOW STANDARD, EXAMINED DURING DECEMBER, JANUARY AND FEBRUARY (Continued).

Lab. No.	Date.	Dealer.	Town.	Total Solids.	Solids Not Fat.	Fat.	Microscopical.	Remarks.
46205	2-2-07	Griffith & Son	Fair Haven	14.76	9.8	5.4	Normal	Dirty
46206	2-2-07	I. A. Wood	"	13.05	8.8	4.2	"	"
46207	2-2-07	F. J. Norton	"	11.50	9.1	5.4	"	"
46208	2-2-07	Peter Wood	"	13.52	8.7	4.8	"	"
46213	2-2-07	E. Myatt	Proctor	12.92	8.6	4.3	"	"
46212	2-2-07	Chas. Mead	"	13.30	8.9	4.4	"	"
46210	2-2-07	R. J. Bruce	"	12.81	8.8	4.0	"	"
46211	2-2-07	J. A. Blanchard	"	12.31	8.3	4.0	"	.....
46248	2-3-07	C. M. Winslow	Brandon	12.93	8.8	4.1	"	"
46249	2-3-07	F. H. Farrington	"	14.31	9.9	4.4	"	"
46250	2-3-07	W. H. Dean	"	13.32	9.3	4.0	"	"
46229	2-4-07	L. Avery	Rutland	12.80	8.8	4.0	"	"
46230	2-4-07	M. S. Goodwin	"	13.18	9.1	4.1	"	"
46231	2-4-07	A. F. Plumley	"	12.57	8.7	3.8	"	"
46232	2-4-07	R. H. Fentell	"	13.18	9.1	4.1	"	"
46233	2-4-07	C. G. Marks	"	12.56	8.5	4.0	"	"
46234	2-4-07	R. F. Russell	"	13.31	9.1	4.2	"	"
46235	2-4-07	I. D. Whitney	"	12.45	8.7	3.7	"	"
46237	2-4-07	G. A. Davis	"	12.93	8.8	4.1	"	"
46238	2-4-07	D. A. Lilly	"	12.45	8.7	3.7	"	"
46239	2-4-07	Temple Bros.	"	12.46	8.9	3.5	"	"
46258	2-4-07	Novak Bros.	"	12.82	9.0	3.8	"	"
46259	2-4-07	T. G. Hart	"	12.57	8.7	3.8	"	"
46260	2-4-07	A. Premo	"	12.34	8.9	3.4	Pus	"
46261	2-4-07	B. Heath	"	12.57	8.7	3.8	Normal	"
46262	2-4-07	C. P. Beebe	"	12.93	8.8	4.1	"	"
46181	2-1-07	R. R. Thrall	Poultney	14.02	9.0	5.0	"	"
46182	2-1-07	R. A. Williams	"	12.69	8.7	3.9	"	"
46183	2-1-07	C. E. Barnes	"	12.63	8.5	4.1	"	"
46184	2-1-07	Jos. St Mary	"	13.27	8.5	4.8	"	"
46185	2-1-07	F. W. Briggs	"	13.78	9.0	4.8	"	"
46186	2-1-07	C. C. Graves	"	.....	.....	43.2	"	"
46478	2-14-07	L. F. Kay	Newport	.....	.....	8.7	"	"
46474	2-14-07	L. F. Kay	"	14.39	9.3	5.1	"	"
46475	2-14-07	U. L. Foster	"	14.02	9.3	4.7	"	"
46476	2-14-07	U. L. Foster	"	13.60	9.0	4.6	"	"
46477	2-14-07	Bug Hinman	"	13.85	8.45	5.4	"	"
46478	2-14-07	F. E. Wilson	"	12.43	8.33	4.1	"	"
46479	2-14-07	Warren Drown	"	14.15	9.3	4.8	"	"
46480	2-14-07	Frank Holbrook	"	14.29	9.6	4.7	"	"
46481	2-14-07	W. J. Scott	"	14.03	9.2	4.8	"	"
46498	2-14-07	W. C. Robinson	"	13.52	8.7	4.8	"	"

Digitized by Google

Miscellaneous Food and Drug Analyses During December, January and February.

Lab. No.	Article.	Brand.	Manufacturer.	Place of Sale.	Quality.	Remarks.
44432	Cooking Oil	I X L	American Cottonseed Oil Co., New York	Burlington	Standard	.....
44593	Cider	.....	.....	Enosburg Falls	....	Contains Methyl alcohol. Stored in barrels used for Wood alcohol. Sold by C. A. Barber.
44690	Sugar	Granulated	.....	Burlington	Standard	....
45254	Whiskey	.....	.....	Submitted by owner	.....	No Methyl alcohol.
43786	Lime Water	.....	Geo. E. Greene	Brattleboro	Standard	.....
43787	"	.....	C. F. Thomas	"	"	.....
43910	"	.....	A. H. Fuller	Bellows Falls	"	.....
45645	Sugar	Granulated	.....	Burlington	.....	Sold by E. J. Thomas Grocery Co. Excess of Ultramarine Blue present.
45718	"	"	.....	"	.....	
46452	Meat	.....	....	Barre	Standard	No evidence of Tuberculosis found.
43777	Acid Boric, Powd	Squibb	Squibb	Brattleboro	Standard	.....
43778	Sodium Bicarbonate	"	"	"	"	.....
41549	Whiskey	.....	....	Hardwick	Below standard	Submitted by license commissioner.
41698	"	.....	.....	St. Johnsbury	"	.....
46187	Butter	.....	D. Smith	Poultney	"	Rancid butter.

Digitized by Google

SPECIMENS OF WATER EXAMINED DURING DECEMBER, JANUARY AND FEBRUARY

TOWNS	GROUND WATER					SURFACE WATERS			Total
	Normal	Polluted			Total	Normal	Polluted	Total	
		Present	Past	Past and Present					
ADDISON COUNTY									
Bristol	.....	2	.....	.....	2	.....	.....	.....	2
Middlebury	1	2	1	.....	4	.....	.....	.....	4
New Haven	.....	.....	.....	3	3	.....	.....	.....	3
Salisbury	.....	.....	.....	1	1	.....	.....	.....	1
Vergennes	2	.....	.....	.....	2	.....	.....	.....	2
Total	3	4	1	4	12	.....	.....	.....	12
BENNINGTON COUNTY									
Arlington	1	.....	.....	.....	1	.....	.....	.....	1
Manchester	1	1	.....	.....	2	.....	.....	.....	2
Readsboro	.....	1	.....	.....	1	.....	1	1	2
Total	2	2	.....	.....	4	.....	1	1	5
CALEDONIA COUNTY									
E. Burke	1	.....	.....	1	2	.....	.....	.....	2
Danville	.....	.....	.....	1	1	.....	.....	.....	1
Groton	.....	.....	.....	.....	.....	1	.....	1	1
Lyndonville	.....	.....	.....	.....	.....	4	.....	4	4
St. Johnsbury	.....	.....	.....	1	1	1	.....	1	2
Total	1	.....	.....	3	4	6	.....	6	10
CHITTENDEN COUNTY									
Burlington	2	4	.....	6	12	4	6	10	22
Essex Junction	.....	.....	.....	.....	.....	.....	1	1	1
Milton	.....	.....	1	.....	1	.....	.....	.....	1
Richmond	.....	.....	1	.....	1	1	.....	1	2
Winooski	.....	.....	.....	.....	.....	.....	1	1	1
Total	2	4	2	6	14	5	8	13	27
ESSEX COUNTY									
Canaan	1	.....	.....	.....	1	.....	.....	.....	1
Island Pond	.....	.....	.....	.....	.....	1	.....	1	1
Total	1	.....	.....	.....	1	1	.....	1	2
FRANKLIN COUNTY									
Fairfax	.....	.....	.....	1	1	.....	.....	.....	1
St. Albans	.....	.....	.....	.....	.....	1	.....	1	1
Total	.....	.....	.....	1	1	1	.....	1	2
GRAND ISLE COUNTY									
Grand Isle	.....	.....	1	.....	1	.....	.....	.....	1
Total	.....	.....	1	.....	1	.....	.....	.....	1

Digitized by Google

SPECIMENS OF WATER EXAMINED DURING DECEMBER, JANUARY AND FEBRUARY (Continued)

TOWNS	GROUND WATER					SURFACE WATERS			Total
	Normal	Polluted			Total	Normal	Polluted	Total	
		Present	Past	Past and Present					
LAMOILLE COUNTY									
Cambridge	1	.....	.....	.....	1	1	.....	1	2
Jeffersonville	1	2	.....	.....	3	1	.....	1	4
Johnson	1	2	1	.....	4	.....	.....	.....	4
Morrisville	1	.....	.....	.....	1	.....	.....	.....	1
Stowe	1	.....	.....	.....	1	.....	.....	.....	1
Wolcott	.....	.....	.....	1	1	.....	.....	.....	1
Total	5	4	1	1	11	2	.....	2	13
ORANGE COUNTY									
Bradford	1	1	.....	.....	2	.....	.....	.....	2
Corinth	.....	.....	1	.....	1	.....	.....	.....	1
Randolph	1	.....	.....	.....	1	.....	.....	.....	1
Tunbridge	.....	1	1	.....	2	.....	.....	.....	2
Total	2	2	2	.....	6	.....	.....	.....	6
ORLEANS COUNTY									
Barton	.....	.....	1	.....	1	.....	.....	.....	1
Newport	.....	.....	.....	.....	.....	.....	2	2	2
Total	.....	.....	1	.....	1	.....	2	2	3
RUTLAND COUNTY									
Brandon	1	.....	.....	.....	1	1	.....	1	2
Castleton	1	.....	2	3	6	.....	.....	.....	6
Clarendon	.....	.....	.....	.....	.....	2	.....	2	2
Fair Haven	.....	.....	.....	.....	.....	1	.....	1	1
Rutland	2	2	.....	.....	4	10	.....	10	14
Proctor	1	.....	.....	.....	1	.....	.....	.....	1
Poultney	.....	.....	.....	2	2	.....	1	1	3
Rutland W	.....	.....	.....	.....	.....	1	.....	1	1
Rutland Ctr	.....	1	.....	.....	1	.....	.....	.....	1
Shrewsbury	.....	.....	1	1	2	1	2	3	5
Wallingford	.....	.....	.....	.....	.....	1	1	2	2
Pittsford	1	.....	.....	.....	1	.....	.....	.....	1
Total	6	3	3	6	18	17	4	21	39
WASHINGTON COUNTY									
Barre	.....	2	1	.....	3	1	.....	1	4
Marshfield	.....	1	.....	.....	1	.....	.....	.....	1
Middlesex	1	.....	.....	1	2	.....	.....	.....	2
Northfield	1	.....	.....	.....	1	2	.....	2	3
Total	2	3	1	1	7	3	.....	3	10

Digitized by Google

SPECIMENS OF WATER EXAMINED DURING DECEMBER, JANUARY AND FEBRUARY

(Continued)

TOWNS	GROUND WATER					SURFACE WATERS			Total
	Normal	Polluted			Total	Normal	Polluted	Total	
		Present	Past	Past and Present					
WINDHAM COUNTY									
Bellows Falls	.....	.....	.....	.....	.....	2	.....	2	2
Dover	.....	.....	.....	.....	.....	.....	1	1	1
Wilmington	2	.....	.....	.....	2	.....	.....	.....	2
Total	2	.....	.....	.....	2	2	1	3	5
WINDSOR COUNTY									
Bethel	1	.....	.....	.....	1	.....	.....	.....	1
Chester	.....	.....	.....	.....	.....	1	.....	1	1
Hartford	.....	1	.....	1	2	.....	.....	.....	2
Hartland	.....	.....	.....	1	1	.....	.....	.....	1
Norwich	.....	1	.....	.....	1	.....	.....	.....	1
Proctorsville	.....	.....	.....	2	2	.....	.....	.....	2
Springfield	1	.....	2	.....	3	.....	.....	.....	3
Windsor	1	1	.....	.....	2	.....	.....	.....	2
Woodstock	.....	.....	.....	1	1	.....	.....	.....	1
Total	3	3	2	5	13	1	.....	1	14
Grand Total	29	25	14	27	95	38	16	54	149

Digitized by Google

SPECIMENS OF BLOOD EXAMINED FOR TYPHOID FEVER DURING DECEMBER, JANUARY AND FEBRUARY

TOWNS	No. of Cases			No. of Specimens		
	Positive	Negative	Total	Positive	Negative	Total
ADDISON CO.						
Lincoln	....	1	1	....	1	1
Middlebury	1	1	2	1	1	2
Ripton	1	....	1	1	....	1
Vergennes	5	3	8	5	3	8
Total	7	5	12	7	5	12
BENNINGTON CO.						
Searsburg	1	....	1	1	....	1
Total	1	....	1	1	....	1
CALEDONIA CO.						
Barnet	....	1	1	....	1	1
Hardwick	....	1	1	....	1	1
Lyndonville	1	....	1	1	....	1
Peacham	....	1	1	....	1	1
St. Johnsbury	4	4	8	4	4	8
Total	5	7	12	5	7	12
CHITTENDEN CO.						
Burlington	11	37	48	11	42	53
Charlotte	....	1	1	....	1	1
Colchester	....	1	1	....	1	1
Richmond	....	3	3	....	3	3
Williston	....	1	1	....	1	1
Winooski	....	1	1	....	1	1
Total	11	44	55	11	49	60
ESSEX CO.						
Island Pond	1	....	1	1	....	1
Total	1	....	1	1	....	1
FRANKLIN CO.						
Fairfield	....	1	1	....	1	1
St. Albans	....	3	3	....	3	3
Total	....	4	4	....	4	4
GRAND ISLE CO.						
Grand Isle	....	1	1	....	1	1
No Hero	....	1	1	....	1	1
Total	....	2	2	....	2	2
LAMOILLE CO.						
Morrisville	1	....	1	1	....	1
Total	1	....	1	1	....	1

TOWNS	No. of Cases			No. of Specimens		
	Positive	Negative	Total	Positive	Negative	Total
ORANGE CO.						
Bradford	....	1	1	....	1	1
Post Mills	1	....	1	1	....	1
Vershire	....	1	1	....	1	1
Total	1	2	3	1	2	3
ORLEANS CO.						
Barton Landing	....	2	2	....	2	2
Derby	1	....	1	1	....	1
Total	1	2	3	1	2	3
RUTLAND CO.						
Brandon	1	7	8	1	7	8
Castleton	....	2	2	....	2	2
Fair Haven	1	1	2	1	1	2
Pittsford	2	3	5	2	3	5
Rutland	5	10	15	5	11	16
Proctor	1	1	2	1	1	2
Poultney	1	....	1	1	....	1
Sudbury	....	1	1	....	1	1
Wallingford	1	2	3	1	2	3
Total	12	27	39	12	28	40
WASHINGTON CO.						
Waterbury	1	....	1	1	....	1
Total	1	....	1	1	....	1
WINDHAM CO.						
Bellows Falls	....	2	2	....	2	2
Brattleboro	1	7	8	1	8	9
Wardsboro	....	1	1	....	1	1
Total	1	10	11	1	11	12
WINDSOR CO.						
Bridgewater	....	1	1	....	1	1
Chester	....	1	1	....	1	1
Hartford	1	1	2	1	1	2
Quechee	1	....	1	1	....	1
Weston	1	....	1	1	....	1
Woodstock	1	....	1	1	....	1
Total	4	3	7	4	3	7
Grand Total	46	106	152	46	113	159

Digitized by Google

CULTURES EXAMINED FOR DIPHTHERIA DURING DECEMBER, JANUARY AND FEBRUARY

TOWNS	NO. OF CASES			NO. OF CULTURES EXAMINED						No. of cases released by negative cultures	Average days duration of time in which germs persisted
	Positive	Negative	Total	Positive	Negative	Suspicious	For Diag.	For Release	Total		
ADDISON COUNTY											
Bristol	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Granville	1	.....	1	1	.....	.....	1	.....	1	.....	.....
Hancock	1	.....	1	1	1	.....	1	1	2	1	7
Total	2	1	3	2	2	.....	3	1	4	1	7
BENNINGTON CO.											
Bennington	1	1	2	1	1	.....	2	.....	2	.....	.....
So. Shaftsbury	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Searsburg	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Total	1	3	4	1	3	.....	4	.....	4	.....	.....
CALEDONIA CO.											
Danville	.....	1	1	.....	2	.....	2	.....	2	.....	.....
St. Johnsbury	1	3	4	1	4	.....	4	1	5	1	8
Total	1	4	5	1	6	.....	6	1	7	1	8
CHITTENDEN CO.											
Burlington	81	229	310	160	327	1	171	317	488	68	10.9
Burlington So.	1	2	3	1	2	.....	3	.....	3	.....	.....
Charlotte	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Colchester	2	8	10	2	10	.....	10	2	12	2	7
Essex	1	1	2	1	1	.....	2	.....	2	.....	.....
Essex Junction	1	.....	1	2	2	.....	1	3	4	1	7
Hinesburg	.....	2	2	.....	2	.....	2	.....	2	.....	.....
Richmond	1	.....	1	1	.....	.....	1	.....	1	.....	.....
Shelburne	1	4	5	1	8	.....	8	1	9	1	4
Williston	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Winooski	6	1	7	6	4	.....	7	3	10	3	3
Total	94	249	343	174	358	1	207	326	533	75	6.2
ESSEX COUNTY											
Canaan	3	24	27	4	28	.....	29	3	32	2	5.5
Total	3	24	27	4	28	.....	29	3	32	2	5.5
FRANKLIN COUNTY											
Fairfax	3	8	11	5	13	.....	14	4	18	1	10
Montgomery Ctr	.....	1	1	....	2	.....	2	.....	2	.....	.....
St. Albans	.....	2	2	.....	2	.....	2	.....	2	....	.....
Sheldon	1	.....	1	1	.....	.....	1	.....	1	.....	.....
Swanton	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Total	4	12	16	6	18	.....	20	4	24	1	10
GRAND ISLE CO.											
Grand Isle	3	7	10	5	19	1	14	11	25	3	8⅔
So. Hero	1	3	4	4	5	.....	4	5	9	1	24
Total	4	10	14	9	24	1	18	16	34	4	16

Digitized by Google

CULTURES EXAMINED FOR DIPHTHERIA DURING DECEMBER, JANUARY AND FEBRUARY (Continued)

TOWNS	NO. OF CASES			NO. OF CULTURES EXAMINED						No. of cases released by negative cultures	Average days duration of time in which germs persisted
	Positive	Negative	Total	Positive	Negative	Suspicious	For Diag.	For Release	Total		
LAMOILLE CO.											
Johnson	.....	2	2	.....	4	.....	4	.....	4	.....	.....
Waterville	1	.....	1	6	3	.....	1	8	9	1	39
Total	1	2	3	6	7	.....	5	8	13	1	39
ORANGE COUNTY											
Braintree	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Chelsea	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Randolph	2	2	4	4	6	.....	4	6	10	2	19
Total	2	4	6	4	8	.....	6	6	12	2	19
ORLEANS COUNTY											
Barton Landing	.....	2	2	.....	2	.....	2	.....	2	.....	.....
Total	.....	2	2	.....	2	.....	2	.....	2	.....	.....
RUTLAND COUNTY											
Castleton	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Fair Haven	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Rutland	5	9	14	5	17	.....	13	9	22	4	9¼
Proctor	1	14	15	1	17	2	17	3	20	1	13
Poultney	.....	2	2	.....	3	.....	3	.....	3	.....	.....
Total	6	27	33	6	39	2	35	12	47	5	11
WASHINGTON CO.											
Barre	2	2	4	3	3	.....	4	2	6	1	10
Marshfield	1	.....	1	1	1	.....	1	1	2	1	7
Montpelier	6	7	13	13	14	.....	13	14	27	5	19
Woodbury	2	.....	2	5	3	.....	2	6	8	2	30
Total	11	9	20	22	21	.....	20	23	43	9	17
WINDHAM COUNTY											
Bellows Falls	.....	2	2	.....	2	.....	2	.....	2	.....	.....
Brattleboro	4	10	14	11	15	.....	15	11	26	4	15
Putney	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Rockingham	.....	4	4	.....	4	.....	4	.....	4	.....	.....
Saxtons River	1	2	3	1	2	.....	3	.....	3	.....	.....
Total	5	19	24	12	24	.....	25	11	36	4	15
WINDSOR COUNTY											
Cavendish	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Chester	1	.....	1	1	1	....	1	1	2	1	6
Hartford	.....	2	2	.....	2	.....	2	.....	2	.....	.....
Hartland	1	.....	1	4	.....	.....	1	3	4	.....	.....
Ludlow	.....	2	2	.....	2	.....	2	.....	2	.....	.....
Rochester	1	.....	1	1	1	.....	1	1	2	1	16
Springfield	1	1	2	2	2	.....	2	2	4	1	12
Total	4	6	10	8	9	.....	10	7	17	3	11⅓
Grand Total	138	372	510	255	549	4	390	418	708	118	14

Digitized by Google

MISCELLANEOUS MICROSCOPICAL EXAMINATIONS MADE AT LABORATORY OF HYGIENE DURING DECEMBER, 1906, JANUARY AND FEBRUARY, 1907.

TOWN.	No. of Specimens.	Description of Material.	Examined for	Results.			Total.
				Pos.	Neg.	Unclassified.	
ADDISON CO.							
Bristol	....	Powder	Composition	.....	.....	Insufficient Quantity	1
"	....	Beef Liver	Tuberculosis	1	.....	.....	1
Vergennes	....	Fæces	Diagnosis	.....	1	.....	1
"	....	Lung of Horse	Diagnosis	.....	1	.....	1
BENNINGTON CO.							
Manchester Ctr.	....	Urine	Tubercle Bacilli	.....	1	.....	1
CALEDONIA CO.							
St. Johnsbury	....	Urine	Tubercle Bacilli	.....	1	.....	1
CHITTENDEN CO.							
Burlington	....	Pus	Gonococci	9	24	.....	33
"	....	Fæces	Diagnosis	.....	1	.....	1
"	....	Intestinal Discharge	Diagnosis	.....	.....	Streptococci Micrococcus	1
"	....	Pus	Diagnosis	.....	.....	Angicatarrbalis	1
"	....	Pus	Diagnosis	.....	.....	Large Streptococcus	1
"	....	Liver	Tuberculosis	1	.....	.....	1
"	....	Meat	Trichinosis	.....	1	.....	1
"	....	Catgut	Sterility	.....	1	.....	1
"	....	Pus	Tubercle Bacilli	1	.....	.....	1
"	....	Urine	Tubercle Bacilli	.....	2	.....	2
"	....	Swab from Cervix	Infecting Organism	.....	.....	Staphlococcus Pyogenus Albus	1
"	....	Swab from Abdomen	Diagnosis	.....	.....	Large Coccus	1
"	....	Culture	Infecting Organism	.....	.....	Streptococci	1
"	....	Culture	Infecting Organism	.....	.....	Staphlococci	1
"	....	Berkfeld Filters	Efficiency	25	1	.....	26
FRANKLIN CO.							
W. Berkshire	....	Beef	Disease	.....	1	.....	1
St. Albans	....	Tissue	Diagnosis	.....	.....	Strongylus Mycrurus	1
GRAND ISLE CO.							
Grand Isle	....	Swab from Uterus	Infecting Organism	.....	.....	Streptococci	1
LAMOILLE CO.							
Johnson	....	Pus	Gonococci	.....	1	.....	
ORANGE CO.							
Brookfield	....	Pleuretic Fluid	Tubercle Bacilli	.....	1	.....	1
Wells River	....	Pus	Gonococci	.....	1	.....	1

Digitized by Google

MISCELLANEOUS MICROSCOPICAL EXAMINATIONS MADE AT LABORATORY OF HYGIENE DURING DECEMBER, 1906, JANUARY AND FEBRUARY, 1907 (Continued).

TOWN.	No. of Specimens.	Description of Material.	Examined for	Results.			Total.
				Pos.	Neg.	Unclassified.	
RUTLAND CO.							
Benson	...	Urine	Diagnosis	1	.....	.....	1
Brandon	....	Blood	Infecting Organism	.....	.....	Not Examined	1
Fair Haven	....	Pus	Gonococci	.....	1	.....	1
Proctor	....	Glands	Tubercle Bacilli	.....	1	.....	1
Rutland	....	Urine	Gonococci	1	.....	.....	1
WASHINGTON CO.							
Barre	....	Pus	Gonococci	.....	1	.....	1
"	....	Fæces	Diagnosis	1	.....	Mucous Colitis	1
WINDHAM CO.							
Brattleboro	....	Pus	Gonococci	1	3	.....	4
"	....	Urine	Tubercle Bacilli	.....	2	.....	2
WINDSOR CO.							
Chester Depot	....	Pus	Tubercle Bacilli	.....	1	.....	1
Rochester	....	Fæces	Diagnosis	.....	1	.....	1
							100

Digitized by Google

SPECIMENS OF SPUTUM EXAMINED FOR TUBERCULOSIS DURING DECEMBER, JANUARY AND FEBRUARY

TOWNS	NO. OF CASES							NO. OF SPECIMENS						
	Male		Female		Sex Not Stated		Total	Male		Female		Sex Not Stated		Total
	Positive	Negative	Positive	Negative	Positive	Negative		Positive	Negative	Positive	Negative	Positive	Negative	
ADDISON COUNTY														
Ferrisburgh	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Lincoln	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Leicester	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Middlebury	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Monkton	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Starksboro	1	....	....	1	....	....	2	1	....	....	1	....	....	2
Shoreham	....	2	....	2	....	....	4	....	2	....	2	....	....	4
Vergennes	....	....	....	2	1	....	3	....	....	....	2	1	....	3
Total	2	3	....	8	1	....	14	2	3	....	8	1	....	14
BENNINGTON COUNTY														
Bennington	....	2	2	4	....	....	8	....	2	2	4	....	....	8
Dorset	....	2	....	....	....	....	2	....	3	....	....	....	....	3
Manchester Center	....	1	....	....	....	....	1	....	1	....	....	....	....	1
South Shaftsbury	....	....	....	....	1	2	3	....	....	....	....	1	2	3
Total	....	5	2	4	1	2	14	....	6	2	4	1	2	15
CALEDONIA COUNTY														
Barnet	....	....	....	2	....	....	2	....	....	....	2	....	....	2
W. Burke	1	1	....	1	....	....	3	1	1	....	1	....	....	3
Hardwick	1	1	3	2	....	....	7	1	1	3	2	....	....	7
McIndoes Falls	....	....	1	....	....	....	1	....	....	1	....	....	....	1
St. Johnsbury	1	6	2	2	....	1	12	1	6	3	2	....	1	13
Total	3	8	6	7	....	1	25	3	8	7	7	....	1	26
CHITTENDEN COUNTY														
Burlington	....	12	5	5	....	....	22	....	12	5	6	....	....	23
Burlington So.	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Charlotte	....	1	....	2	....	....	3	....	1	....	2	....	....	3
Colchester	....	1	....	1	....	....	2	....	2	....	1	....	....	3
Essex Junction	....	1	....	2	....	....	3	....	1	....	2	....	....	3
Hinesburg	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Huntington	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Jericho	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Jericho Ctr.	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Milton	....	....	....	2	....	....	2	....	....	....	2	....	....	2
Richmond	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Shelburne	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Westford	....	2	....	....	....	....	2	....	2	....	....	....	....	2
Williston	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Winooski	....	1	....	1	....	....	2	....	1	....	1	....	....	2
Total	1	23	5	15	....	....	44	1	24	5	16	....	....	46
ESSEX COUNTY														
Island Pond	....	....	1	....	....	....	1	....	....	1	....	....	....	1
Total	....	....	1	....	....	....	1	....	....	1	....	....	....	1

Digitized by Google

SPECIMENS OF SPUTUM EXAMINED FOR TUBERCULOSIS DURING DECEMBER, JANUARY AND FEBRUARY (Continued)

TOWNS	NO. OF CASES							NO. OF SPECIMENS						
	Male		Female		Sex Not Stated		Total	Male		Female		Sex Not Stated		Total
	Positive	Negative	Positive	Negative	Positive	Negative		Positive	Negative	Positive	Nogative	Positive	Negative	
FRANKLIN COUNTY														
Bakersfield	....	1	....	1	....	....	2	....	1	....	1	....	....	2
Franklin	....	1	....	1	....	....	2	....	1	....	1	....	....	2
Highgate	....	....	1	....	....	....	1	....	....	1	....	....	....	1
Montgomery	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Richford	....	....	....	1	....	....	1	....	....	....	1	....	....	1
St. Albans	1	....	....	1	....	....	2	1	....	....	1	....	....	2
Swanton	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Total	1	4	1	4	....	....	10	1	4	1	4	....	....	10
GRAND ISLE COUNTY														
Alburg	....	....	....	1	....	....	1	....	....	....	3	....	....	3
Isle La Motte	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Total	....	1	....	1	....	....	2	....	1	....	3	....	....	4
LAMOILLE COUNTY														
Belvidere	....	1	....	1	....	....	2	....	3	....	1	....	....	4
Cambridge	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Jeffersonville	....	....	....	....	....	1	1	....	....	....	....	....	1	1
Johnson	1	....	....	....	....	....	1	2	....	....	....	....	....	2
Stowe	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Waterville	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Total	2	3	....	1	....	1	7	3	5	....	1	....	1	10
ORANGE COUNTY														
Bradford	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Post Mills	1	1	....	....	....	....	2	1	1	....	....	....	....	2
Randolph	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Stafford	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Tunbridge	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Wells River	....	1	....	1	....	....	2	....	1	....	1	....	....	2
Williamstown	....	1	....	1	....	....	2	....	1	....	1	....	....	2
Total	2	4	....	4	....	....	10	2	4	....	4	....	....	10
ORLEANS COUNTY														
Barton	....	1	....	....	1	1	3	....	1	....	....	1	1	3
Barton Landing	....	1	1	1	....	....	3	....	1	1	1	....	....	3
Charleston	....	1	....	....	....	....	1	....	2	....	....	....	....	2
Coventry	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Derby	....	....	....	2	....	....	2	....	....	....	2	....	....	2
Glover	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Irasburg	1	1	....	....	....	....	2	1	1	....	....	....	....	2
Newport	....	....	....	1	1	....	2	....	....	....	2	1	....	3
Troy	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Total	1	5	1	6	2	1	16	1	6	1	7	2	1	18

Digitized by Google

SPECIMENS OF SPUTUM EXAMINED FOR TUBERCULOSIS DURING DECEMBER, JANUARY AND FEBRUARY (Continued)

TOWNS	NO. OF CASES							NO. OF SPECIMENS						
	Male		Female		Sex Not Stated		Total	Male		Female		Sex Not Stated		Total
	Positive	Negative	Positive	Negative	Positive	Negative		Positive	Negative	Positive	Negative	Positive	Negative	
RUTLAND COUNTY														
Brandon	....	3	....	1	....	....	4	....	3	....	1	....	....	4
Castleton	....	....	1	....	....	....	1	....	....	1	....	....	....	1
Fair Haven	....	....	....	2	....	....	2	....	....	....	2	....	....	2
Hubbardton	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Mechanicsville	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Rutland	1	7	....	8	....	....	16	1	7	....	8	....	....	16
Proctor	2	3	....	3	....	....	8	2	3	....	3	....	....	8
Poultney	1	1	1	1	....	....	4	1	1	1	1	....	....	4
Rutland W.	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Rutland Ctr.	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Tinmouth	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Pittsford	....	2	....	....	....	....	2	....	2	....	....	....	....	2
Total	4	17	2	19	....	....	42	4	17	2	19	....	....	42
WASHINGTON COUNTY														
Barre	5	4	....	2	....	....	11	5	5	....	2	....	....	12
Calais	....	3	....	1	....	....	4	....	3	....	1	....	....	4
Graniteville	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Marshfield	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Montpelier	2	2	4	1	....	....	9	2	2	4	1	....	....	9
Northfield	....	1	1	....	....	....	2	....	1	1	....	....	....	2
Plainfield	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Waitsfield	....	1	....	2	....	....	3	....	1	....	2	....	....	3
Waterbury	....	1	....	1	....	1	3	....	1	....	1	....	1	3
Total	8	13	5	8	....	1	35	8	14	5	8	....	1	36
WINDHAM COUNTY														
Bellows Falls	....	2	....	1	....	....	3	....	2	....	1	....	..	3
Brattleboro	2	5	2	7	....	....	16	2	5	2	7	....	....	16
Dover	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Newfane	....	1	....	1	....	....	2	....	1	....	1	....	....	2
Saxtons River	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Townshend	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Westminster	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Total	2	11	2	10	....	....	25	2	11	2	10	....	....	25
WINDSOR COUNTY														
Bethel	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Chester	....	1	....	1	....	....	2	....	1	....	1	....	....	2
Hartford	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Ludlow	....	1	....	1	....	....	2	....	1	....	1	....	....	2
Proctorsville	....	1	....	1	....	....	2	....	1	....	1	....	....	2
Quechee	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Springfield	1	....	....	1	....	....	2	1	....	....	1	....	....	2
Tyson Furnace	....	....	1	....	....	....	1	....	....	1	....	....	....	1
White River Junction	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Windsor	....	1	....	1	....	....	2	....	2	....	....	....	....	2
Woodstock	....	....	1	2	....	....	3	....	....	1	3	....	....	4
Total	4	4	2	7	....	....	17	4	5	2	8	....	....	19
Grand Total	30	101	27	93	4	6	262	31	98	28	99	4	6	266

Digitized by Google

CASES OF COMMUNICABLE DISEASES REPORTED TO THE SECRETARY OF THE STATE BOARD OF HEALTH FROM DECEMBER 1 TO FEBRUARY 20, INCLUSIVE.

County.	Small Pox.	Measles.	Whooping Cough	Scarletina.	Diphtheria and Croup	Typhoid Fever.	Erysipelas.	Chicken Pox.	Mumps.	Pneumonia	German Measles.
Addison	.....	.....	39	4	2	5	.....	19	.....	1	.....
Bennington	.....	.....	58	1	4	1	1	.....	18	6	.....
Caledonia	.....	1	45	6	5	17	.....	22	8	6	.....
Chittenden	.....	1	49	5	90	4	3	10	2	.....	1
Essex	.....	.....	.....	1	2	3	.....	.....	.....	.....	.....
Franklin	.....	17	.....	7	18	7	.....	3	5	10	23
Grand Isle	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....
Lamoille	.....	.....	.....	5	2	.....	.....	14	2	.....	.....
Orange	.....	.....	47	2	3	1	1	20	.....	1	10
Orleans	.....	.....	104	.....	.....	1	.....	.....	1	.....	.....
Rutland	.....	1	50	7	7	12	.....	37	.....	.....	.....
Washington	.....	.....	52	3	7	4	.....	.....	.....	5	4
Windham	.....	5	166	14	12	8	1	43	2	4	.....
Windsor	.....	2	43	3	1	1	.....	13	1	.....	.....
Totals	.....	27	653	68	157	64	6	181	39	33	38

Digitized by Google

G 74.0979
V 2 f

Bulletin No. 4, Volume VII.

Issued Quarterly by

Vermont State Board of Health,

June 1, 1907.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS:

The Medico-Legal Work of the State Laboratory in Its Relation to the State, by H. L. White, A. M., Medico-Legal Chemist to State Board of Health.

Importance of Pure Foods to the Physician, by H. W. Wiley, M. D., Chemist United States Board of Agriculture, Washington, D. C.

Notes of a Typhoid Outbreak in Mill River Valley, by Charles S. Caverly, M. D., Rutland, Vt.

Report of Examinations at the Laboratory from February 20 to May 10, 1907.

Milk Standards at the State Laboratory, by L. P. Sprague, M. D.

News Items.

School of Instruction for Health Officers.

BRATTLEBORO, VT.
1907

Digitized by Google

Digitized by Google

THE MEDICO-LEGAL WORK OF THE STATE LABORATORY IN ITS RELATION TO THE STATE.

By H. L. White, A. M., Medico-Legal Chemist to State Board of Health.

The Laboratory of Hygiene in this state is unique in one respect, at least, and that is in its medico-legal department. As far as the speaker knows, there is no other state or national organization that has any arrangement for medico-legal investigations where the parties making such investigations are retained on a permanent salary basis. In some states there are appointed "state assayers" or "state chemists," and in some cases "state pathologists," who are available for expert service when called upon by the state and who are paid for work on each case as it arises. A close watch of the news columns of the papers of the New England States discloses the fact, however, that under such arrangements there is far less medico-legal work performed than is done in our own state under the present arrangement.

The establishment of the Laboratory of Hygiene of the Vermont State Board of Health was authorized by the General Assembly of 1898 and was organized for the purpose of making chemical and bacteriological examinations of water supplies, milk and all food products, and examination of cases and suspected cases of diphtheria, typhoid fever, tuberculosis, malaria, and other infectious and contagious diseases. The sum of $8,000 per year was appropriated for running expenses. The work of the laboratory having increased so rapidly, it was found necessary in 1900 to ask the legislature for a larger appropriation, and so an increase of $4,000 per year was asked for, making a total of $12,000 per year for running expenses. This brought the Act of the Assembly of 1898 up for review. During the two years of the laboratory's existence, its officials had been called upon in a private capacity to give expert testimony in several important cases and had charged expert's fees; so when the Act of 1898 was being reviewed, some of the lawyers and state's attorneys conceived the idea of having the laboratory staff and equipment organized for the assistance of *any* state's attorney who might require chemical or pathological examinations. The idea was finally incorporated in Section 4, Act No. 90 of the General Assembly of 1900, which reads as follows:—

"Section 4. The use of the laboratory, and all investigations mentioned in this act therein made, shall be free to the people of this state. And whenever the state's attorney of any county, on the order of a judge of the supreme court, shall request for use in any criminal case pending in his office, an expert investigation chemical or pathological, of any substance, such investigation shall be made at the laboratory forthwith, without charge to the state, and the expert making such investigation shall submit the results of his work to the state's attorney at whose request it is done and shall attend

Digitized by Google

court as a witness at any place in the state when required to do so by subpœna and submit in court the results of his investigations, and shall be paid as such witness his actual expenses of attendance, when summoned by the state."

In the meantime the desired increase of $4,000 per annum had been reduced to $2,000, and so the net result, as far as the laboratory was concerned, was an increased appropriation of $2,000 for running expenses, and a corresponding increase in the amount of work to be done. According to the report of the laboratory for the years 1901-05 there has been an increase of nearly fifty per cent in the amount of work done in the laboratory since this appropriation was made.

As indicated in Section 4 of Act No. 90 of the Assembly of 1900, medico-legal investigations are made only upon order of a judge of the supreme court. This order is only obtained by the attorney-general or state's attorney of the county in which an investigation is desired. Therefore it is highly important that any health officer who desires the services of the laboratory for medico-legal investigations should communicate with the state's attorney of his county as soon as possible so as to obtain this order. Otherwise the examination is postponed until the authorization is obtained.

The amount of medico-legal work done in this department is considerable as the following figures will show:—

From Dec. 1, 1900, to Dec. 1, 1901,	12 cases (1 year)
From Dec. 1, 1901, to Dec. 1, 1903,	26 cases
From Dec. 1, 1903, to Dec. 1, 1905,	34 cases
From Dec. 1, 1905, to July 1, 1906,	13 cases

These figures do not include a large variety of material sent to the laboratory for which no order for the examination was obtained.

These cases cover a wide range as regards material, and in their examination call for a wide range of scientific work. They include chemical and pathological examinations of organs and tissues in homicidal cases; the examination of bodies of domestic animals for poisonous substances; the examination of suspected blood stains and the determination of the nature of these stains as to whether they are human blood stains or not; the examination of clothing and secretions in cases of alleged assault or rape; the examination of miscellaneous food products and medicinal compounds for poisonous substances; and the determination of the percentage of alcohol in samples of liquors from the no-license towns.

The value of the work done in this department reckoned on the basis of amounts paid for similar work in other states is about as follows:—

December 1, 1900, to December 1, 1901,	$1,875
December 1, 1901, to December 1, 1903,	2,500
December 1, 1903, to December 1, 1905,	2,260
December 1, 1905, to July 1, 1906,	1,285

Digitized by Google

The prices assigned to this work in the schedule are very moderate as compared with amounts paid to private parties for work of a similar nature. Fees of $1,000 per case and higher are common in medico-legal work. It is reported that in the Molineaux case the chemist for the prosecution charged, and received, a fee of $18,000 for his services; and the report of other large fees is common. It would seem from these considerations alone, that having this work done by the state itself has been a profitable investment.

It is not in the amount of money saved to the state, however, that the chief value of this department lies. In fact, it is not in the number of positive cases, that is, cases in which poison is found or other direct evidence of foul play, but rather in the large number of suspicious cases which are investigated but in which no evidence of criminal action is obtained. In some of our communities a person may be tried and condemned by village gossip and suffer ostracism by his neighbors until a report from the laboratory shows that such suspicions were unfounded. The laboratory investigation sets at rest current rumors of lawlessness and crime, and shows plainly that every suspicious illness or death is not necessarily due to criminal action. Carelessness, lack of sanitation, and the cumulative action of some diseased condition are frequent causes of sickness and death closely resembling those caused by criminal action.

The very fact that work is done at such a reasonable expense to the state has led to an increasing amount, as the number of cases quoted shows. It is certain that the laboratory has been called upon to make expert examinations in many instances where, if there had been a reasonable figure charged for such service, the necessity of an examination would not have been very urgent. The increased work has brought about a condition where it is necessary at times to choose between the examination of tissues and organs of domestic animals and the consideration of homicidal cases; and it often happens that a health officer or a state's attorney is impatient because he does not get a full and complete report in his particular case by return mail or in a week's time at the latest. If the equipment of the medico-legal room and the time of the chemist is to be occupied with the analyses of organs of domestic animals, the more important cases will be delayed in consequence. It is incumbent upon health officers and prosecuting officers that a thorough investigation be made into all the circumstances of the case in order that they may arrive at a decision as to whether it is absolutely necessary that the state laboratory be called upon to take part in the investigation. There are cases enough of real importance to need the services of the laboratory staff without a large number of comparatively unimportant cases. As an illustration of the tendency to have the laboratory "do all the work," mention may be made of an instance where the laboratory was called upon to investigate the case of a man who had bought strychnine and died with all the symptoms of strychnine poisoning. Certain organs were sent to the laboratory with a request that a report

Digitized by Google

be made at once so that the death certificate might be signed by the health officer. Here was a case that involved from two to four weeks' work at the laboratory but where the circumstantial evidence would seem to be complete enough to satisfy the officials of the town.

To make the work of the laboratory more effective, there are some precautions to be taken on the part of the health officers and others who may be officially connected with each case. First, there must be greater care exercised in the collection of all the details in each case—a careful history by the physicians of each case of sickness or death under suspicious circumstances and the collection of all data that may give a possible clue to the effects noted. In many cases of poisoning, a bottle or other package found in the immediate vicinity or portions of the last meal partaken of, or some other article may furnish a clue that will allow the chemist and pathologist to make an early report and save them many long hours of labor. Secondly, greater care must be exercised in the collection and transmission to the laboratory of materials for examination. Probably those who are to discuss this paper will call our attention to the necessity of carefulness in this particular. We have tried to make this plain to all health officers by sending them printed directions in this matter, but the result is not entirely satisfactory. Among the directions sent the health officers is the following:—

*"The organs and materials which are to be sent to the Laboratory for chemical and pathological examination should be removed under the most cleanly conditions possible. In case of suspected poisoning of a human being the materials forwarded should include the brain, stomach, entire intestinal tract, liver, kidneys, spleen, piece of muscle from the thigh, and the urine. When the bodies of domestic animals are to be examined for poisons, the stomach, liver, kidneys, urine, and a sample of blood should be forwarded. In either case the organs and other material must be sent in separate vessels. The vessels must be new and clean and no metallic coverings or stoppers of any kind may be used. These vessels should be sealed in such a manner that the covers or stoppers cannot be removed without destroying the seal or cutting the tape. No preservative should be used unless shipment is necessarily delayed and decomposition has begun. In this case, alcohol may be put in the vessels and a quart of the alcohol must be sent to the laboratory in a separate receptacle, with the other material."

You will note the emphasis laid upon the necessity of sealing the jars and other receptacles so that they may not be opened without our knowledge; but the laboratory is constantly in receipt of articles wrapped in such a manner that later identification or the certainty that they have not been tampered with in transit is difficult to prove. For example, we recently received some articles for examination which were wrapped in paper and tied with string without seal or other distinguishing marks.

*Act No. 172 of 1906.

Digitized by Google

In another case a horse's stomach was shipped in a wooden box with such wide cracks that the tissue could easily be seen and there was all the chance in the world for anyone to add to the contents of the box. Such carelessness as this may set at naught all careful examination made at the laboratory.

When an autopsy is made in a case of suspected poisoning, there is always the necessity of the utmost care in the cleanliness of the vessels used as receptacles for organs and tissues and for their sealing so that they may not be opened without destroying the seal or cutting the tape. The results of medico-legal autopsies as a class have not been very satisfactory. Many of the physicians of the state are not often called upon to make an autopsy, and still fewer to make one for medico-legal purposes. The way the autopsy is conducted and the preservation of the material may be of very great importance if the results are to be presented to a jury. In several cases which have occurred during the existence of the medico-legal department, it has been found necessary to disinter the body to remove organs and tissues that should have been removed at the time the autopsy was made. Such incidents complicate the matter of identification and lead to embarrassment of the state officials in their presentation of the case.

Owing to the lack of uniformity by which autopsies and medico-legal examinations are made, a change seems highly desirable, and we believe it can best be brought about by the appointment of an official, whose duties shall correspond in some measure to those of the coroner's physicians or medical examiners in other states. Such an official should be a graduate of medicine and should have a training that would qualify him for all kinds of pathological work. He should be ready day or night to respond to a call from a state's attorney carrying with him all needful instruments for his work and proper receptacles for such organs and tissues as may require further examination. He could also note the circumstances under which the body is placed, and such things as spots, scars, stains, or odors, as might escape the attention of anyone less experienced in this line of work. The causes of many deaths under suspicious circumstances would be revealed by a careful autopsy and subsequent pathological examination, thus eliminating from prolonged chemical examination many cases that now occupy such a large proportion of our time and attention. Incidentally our newspapers would have a few less "scare headlines" if some deaths under suspicious circumstances were found to be due to natural causes; and "our new Vermont" would not receive such extensive advertising along criminal lines as it does at the present time.

DISCUSSION.

S. Hollister Jackson, Barre, Vt.

I am very glad to be present, not alone for the purpose of discussing this paper, but especially to hear what Professor White has had to say.

Digitized by Google

Certainly as state's attorney from one of the counties, and in behalf of every other state's attorney in this state, I can heartily second everything Professor White has said.

My discussion, therefore, resolves itself into emphasizing two matters—one of which Professor White refers to, and the other of which arises from the discussion of the pure food paper.

The first suggestion may be summed up in the following rule: *Every health officer and every physician who has the slightest suspicion that a death is caused by some unnatural cause ought to immediately notify the state's attorney.* The first man called in such a case is the doctor; the next should be the state's attorney. The reason for this rule is self-evident. To follow it means the placing of responsibility on the proper official and the successful prosecution of the action resulting from the early investigation. To ignore it means the escaping of the wrongdoer or prosecution made well-nigh ineffective. (The speaker here illustrated his point by referring to a case now pending in the courts.)

This case illustrates the necessity of such a rule. If the prosecuting officer is on hand he can examine the surroundings, impound the articles that may furnish evidence, and advise in those matters peculiarly within his knowledge.

The same rule applies to an autopsy. Have the state's attorney there. He knows that, should a case in court develop and one be accused of homicide, it will be necessary to exclude all other causes of death than the one claimed by the state. Therefore an autopsy, made for whatever cause, should be thorough, and every organ or vital portion of the body carefully examined. What a position a prosecuting officer would be in, were a doctor improved as a witness by the state and, asked if the deceased did not have some disease of the brain, in answer thereto would have to say, "I do not know; I did not examine the brain!"

And finally on this point, when you notify the state's attorney *before* an autopsy, the judge is more inclined to allow for the physician's services out of the state's exchequer, than if the attorney is notified *after* the autopsy.

The second matter I would seek to emphasize is this: The punishment of those who put bad foods upon the market lies primarily at the door of the physician. He is again the first man called in case of sickness. Again, on the slightest suspicion, the state's attorney should be second. I have in mind the case of a man who died from a disease contracted by his eating unfit meat. But the prosecuting officer was not informed of this until a month had elapsed after the man's death, when it was impossible to discover who had sold the meat and to perform a proper autopsy. The physician's memory had also become affected.

In all these matters of sickness and suspicion the physician is as much a public servant as the state's attorney. And finally, if the observance of the rule I have laid down does little good in many cases, it will do good in some cases, and no harm in any case.

Digitized by Google

The secretary of the school asks what a health officer can do when a state's attorney will not press to action a complaint made to him, and the speaker answered, "When a state's attorney will not, for any unreasonable cause, take up such a case, the health officer has the right to call the grand jury's attention to the matter, and if the neglect of the state's attorney is notorious the statute provides for the appointment, on petition, of a special prosecutor."

Warren R. Austin, St. Albans, Vt.

I have had like experience to that encountered by Brother Jackson, and following the lead of Professor White in his most excellent and interesting paper, and considering the relations of medicine and the laboratory to the administration of the criminal law, alone, I declare at the outset that I endorse his suggestion of a change. The great service and function of the expert witness is to make clear and significant of cause or effect those very things which to the judge, juror and lawyer are otherwise occult and meaningless. He differs from the ordinary witness in that the latter must state facts only; whereas, it is the function of the former to express opinions, based, however, solely on the facts developed by the evidence, and in these opinions consists the value of his testimony.

A diligent study of the authorities on forensic medicine and a special practice in medico-legal work ought to enable the doctor to know something of the nature of legal evidence—what symptoms, conditions and facts are important to observe in making a post-mortem, what organs to send to the laboratory, and especially how to prepare such exhibits for preservation, examination and absolute identification—and upon the trial of a case what is proper for him to say of his own motion, what he should only disclose in answer to authorized questions, and what he should retain in the great storehouse of his knowledge.

But, with forensic medicine studied only in our medical colleges and seldom after looked up again by our doctors in their busy life, whose common occupation is not medico-legal work, the laboratory in the first instance, as Professor White has demonstrated, and the courts in the last place, are very inadequately served, where opinions of the very highest importance are called for, involving the lives, character and fortunes of the parties to the suit.

One great difficulty is, that medical testimony, instead of being delivered with good emphasis and expression, so often gives an uncertain sound. That doctors "differ" is proverbial; medical gentlemen, although honest, intelligent and impartial, are prone to cherish crochets, to be sometimes dogmatic and didactic, and withal, to indulge freely in the use of technicalities, which their study, daily experience and habits have forced upon them (and for which they are not to be censured). This proclivity is amusingly illustrated by the testimony of a young house surgeon in an English case of assault: The witness said, "I discovered considerable echymosis under the left

Digitized by Google

orbit, caused by the extravasation of blood beneath the cuticle." Baron Bramwell: "I suppose you mean the man had a black eye?" Witness: "Precisely, my lord." Baron: "Perhaps if you said so, in plain English, those gentlemen would better understand you." "Precisely, my lord," answered the learned surgeon, evidently delighted that the judge understood his meaning. This would have been worthy of the young medical witness, who described a suppression of perspiration as "an agglutination of the sebaceous follicles." Hence, it is not wonderful that they frequently get up medical questions more doubtful, perplexing and complicated than the legal issues on trial, in the midst of which the state's attorney stands before the learned pundit overpowered by a jargon more mysterious than his own, in bewilderment, not unlike that of Meg Merrilies, the gypsy fortune-teller, in the presence of Mannering and Dominie Sampson, as they discoursed with grave erudition on astrology.

With a mass of testimony confused and contradictory, a number of medical witnesses in a cloud as to what has been proved and what has not, and two or more lawyers who do not understand the physicians, it is hardly reasonable to expect that the jury, however sensible, could evolve order out of such chaos. Such, too often, is the situation in our courts, and I allude to these things in discussion, not to prove a well-known fact, but to emphasize that fact. Present conditions are unsafe.

But the laboratory has already opened the door to improvement of conditions, by the use of a medico-legal expert having special training for forensic work, although the scope of his investigation is limited and confined to the laboratory. The State Board of Health, by these schools and by the circulation of literature, is doing its utmost to give the state the best possible service in these matters; but I think that no number of pamphlets, no amount of rules and regulations, nor preaching nor suggesting in these schools of health can sufficiently educate the physician for making proper post-mortems in medico-legal cases. They have, for a long time, managed these things better in France. As early as 1606, King Henry IV. of France directed his physician to appoint two surgeons in each city or large town whose duty it should be to examine and report on all wounded or murdered persons, and from this nucleus grew up the system of French medical jurisprudence.

Of course there are criticisms to be made of officialdom of any kind; but the weight of reason seems to be in favor of the establishing of a system in the state whereby the body politic may be served by men specially educated and trained to make complete, just and adequate examinations and autopsies, to furnish the laboratory with full reports, with specimens and organs in proper receptacles, sealed and marked systematically, and to make plain and significant to prosecuting officers, courts and juries the scientific observation necessary to determine whether a crime may have been committed or not. One man might be able to do the work, if incidents would accommodate themselves to his time; but if, for instance, there should be an autopsy to

Digitized by Google

be performed upon bodies found in Bennington and in Richford on the same day, under circumstances warranting suspicion of death from poisoning of a volatile nature, it would be important to perform both examinations at once, since a short time would suffice to eradicate the valuable evidence, and this could not be done because of the remoteness of the cases from each other. Under present conditions, autopsies are often delayed because of the necessity of obtaining an order from the judge of the supreme court, or from the attorney general before acting. And so it seems to me that expert physicians, such as coroner, should be provided for certain districts of the state, to be determined upon from statistics obtainable, whose qualifications for office should be ascertained by a practical test, and who should be vested with power to act immediately upon complaint from any reliable citizen, or even upon their own initiative; whose tenure of office should not depend upon politics and whose pay should be sufficient to command their most skilful and diligent attention to the needs of the state.

In closing this discussion, I commend the laboratory for the efficient work it is now doing. My own experience as attorney for Franklin county has involved the use of the laboratory in important cases, and its work has resulted in protecting the innocent from accusation, as well as securing the guilty from escape.

IMPORTANCE OF PURE FOODS TO THE PHYSICIAN.*

BY H. W. WILEY, M. D.,

CHEMIST UNITED STATES BOARD OF AGRICULTURE, WASHINGTON, D. C.

In the great contest which has just been successfully ended before the United States Congress in the cause of pure foods and drugs, the interest of the physician in pure foods has not received the attention which it deserves. The question of foods has been constantly discussed before the committees from the point of view of the manufacturer who desired to use colors and preservatives in his products and to place false labels upon them for the sake of increasing his profits and deceiving his customers, and from the attitude of the consumer who objected to the use of colors and preservatives in his foods and insisted on the label telling the truth.

The health officers of Vermont are largely associated with the medical profession, and therefore have a peculiar interest in the relations of pure foods to medical practice. What I desire to say in this paper, therefore, is particularly on this point. The belief is gaining ground rapidly in the

* Read at the Eighth Annual School of Instruction for Health Officers, Burlington, Vt., July 9-12 inclusive, 1906.

Digitized by Google

medical profession that the true art of healing is more intimately associated with the true art of nutrition than has been commonly supposed. In the early days of medicine the utilization of supernatural forces was largely invoked in the curing of disease and these superstitions still remain to a certain extent. When it was found that certain drugs had specific action upon the organs of the body, many of them favorable in the curing of disease, there was introduced into medicine a widespread belief in the faculty and among the laity that the drug or remedy was the principal thing in the cure of disease. I have no desire whatever to minimize the value of drugs in the treatment of disease, but I wish to call attention in this paper to the importance of physicians being able to secure wholesome and nutritious foods for their patients. I perhaps can best introduce this point of the subject by mentioning a case which lately came under my own observation, where a man prominent in public life, suffering from disease, had prescribed for him a certain compound, the name of which I shall not mention, which was claimed by its manufacturer, and perhaps believed by the physician prescribing it, to be of high nutritive value. The compound in question was found upon analysis to be a very small quantity of some protein matter and a considerable quantity of sugar preserved in a very large quantity of alcohol. The food itself was offered as a peptonized food, but did not contain a sufficient quantity of protein matter to give the remotest basis for its claim as a protein product. Perhaps if the physician had known the true constitution of this remedy he would not have prescribed it, for his patient may not have needed sugar and may not have needed alcohol.

Lately, the Food Standards Committee of the Association of Official Agricultural Chemists studied very carefully the problem of prescribing standards for ice cream. The difficulties of such a task can be easily understood by all of you when you consider that each manufacturer makes a product usually according to his own sweet will, and of such components as will give bright and attractive colors and firmness of composition associated with a certain degree of refrigeration to the consumer. The principal argument which was advanced before the committee in favor of a standard for ice cream was its relations to the medical profession. There are many cases where ice cream is prescribed by the physician, and what does the patient get when a physician prescribes ice cream and the product is obtained from the dealer? No one knows unless he is in the secret of the manufacturer himself. What the physician means to prescribe when he prescribes ice cream is good, rich cream, pure sugar and a harmless flavor, such as vanilla or some other similar one, congealed to a condition of more or less consistence. Therefore the standard of ice cream provides that the substance known as ice cream should consist of pure standard cream containing not less than eighteen per cent of butter fat, of pure sugar and a harmless flavor, the sugar and flavor added in quantities which would not reduce the percentage of butter fat in the finished mixture below fourteen per cent. This standard has been approved by the Secretary of Agriculture

Digitized by Google

under authority of Congress and has therefore become the official standard throughout the country for all matters over which the United States Government has any control. If it shall be adopted by the various states, as it probably will be, the physician hereafter may know, when he prescribes ice cream of standard quality, exactly what his patient is getting.

The greatest interest of the physician and health officer in foods naturally centers in those which are offered particularly for invalids and infants. The infant food especially is of the most vital importance because of the terrible mortality which occurs among infants throughout the year and especially in summer, due to imperfect and impure milk. There is perhaps no one other article of food in which the health officer is so much interested as that of milk alone. It is evident that if the mortality in infants and young children can be overcome by the use of pure milk, the average age of human life will be greatly prolonged. For this reason the health officers in all localities, and physicians in general, should insist that the milk given infants and invalids should be certified by competent hygienic and medical authorities. All over the United States are now erected and in process of erection dairies which furnish certified milk. These are dairies which are inspected by competent officials to see that the cows are free from disease, that their stabling is sanitary, that the milk is clean and properly handled, and that it does not enter commerce with more than the normal number of organisms per cubic centimeter. Such certified milk, it has been shown by the experienced physician and others, is far more wholesome and desirable than ordinary milk, of origin unknown, which has been pasteurized. In other words, the pasteurization of milk for general use is only a precaution which has been taken and which ought to be taken when the origin of the milk is unknown. When, however, real certified milk can be secured, its superiority as a diet for children and for grown people is undisputed.

What shall be the attitude of the health officer and the physician towards that vast magazine of predigested foods which is offered throughout this country for the infant and the invalid? The answer to this question is that it should be that of approval of honest labeling and honest composition. I think it may be taken for granted that the healthy individual has no need of predigested foods. It is a well-known fact that anything which tends to diminish the normal activity of an organ impairs finally its vitality. Hence there is no need for predigestion in the case of a healthy individual. Every step in predigestion can only diminish to that extent the normal activity of the digestive organs and thus impair their ability to do work. In the case of invalids, however, a different condition confronts us. Here we have often impaired vitality of the digestive organs, inability to digest or assimilate the nutrients of the food. Artificial aid then becomes necessary and a real predigested food is advisable.

In this case of impaired activity the organs are not capable of performing their normal functions and hence the attempt to digest the ordinary food might easily end in disaster. It is the duty of the health officer and the

Digitized by Google

physician to tide over this condition of affairs by aiding in the sustenance and nutrition of the body by artificial means until normal functions can be restored, and no longer. Hence it seems to me there is a place, and a legitimate place, for predigested foods. I need not, however, more than call your attention to the abuse of this term which is so commonly made and the exaggerated claims which are put forward for many of the articles of commerce in infants' and invalids' foods. I am not going to dwell upon this point at the present time further than to call your attention to the fact that there is much deception relating to these points either by false claims or by the suggestion of false properties, which meet the eye and the approval of the physician and the health officer and in turn the approval of the consumer himself. I think it will be conceded that when the manufacturers are brought face to face with problems of this kind they will be ready at once to withdraw any false claims which they have made for their products and thus place them upon a strictly ethical basis.

Great damage may be done unwittingly by the physician and the health officer in the use of misbranded foods which in themselves perhaps are not unwholesome, but which, if their true character were known, would not be administered to the invalid or the convalescent. For this reason every physician and health officer is vitally interested in the problem of proper branding. *Let the label tell the truth* is a motto which should be equally respected by manufacturer and consumer. More than that, the term "label" should be used in its broadest sense, not simply applying to any printed matter or device pasted upon the package, but to any statement or suggestion of a statement in the literature connected with the manufactured product. It is not sufficient for the manufacturer to leave off the package any label whatever and then claim that his goods are not misbranded. A package is misbranded if it contains not a word nor a diagram nor a design of any kind, if the man who sells it makes any false statement concerning it or if the man who buys it receives a character, quality or kind of goods not demanded. A package is misbranded which is sold to a customer who asks for olive oil if the label contain the legend "Salad Oil," or if it contain no legend at all. Thus, it is not only the right but the duty of the physician to know whether or not the food which he prescribes for his patient is what it is represented to be.

I am not one of those who are opposed to the mixing and blending of nutritious and harmless substances for human foods. This is a matter, it seems to me, which is solely one between the consumer and the manufacturer; nor does any law, in so far as I know—at least, any just law—interfere with mixtures and compounds of this kind. There is, however, a most serious objection to any form of deception which may be practiced under the guise of imitations, mixtures, compounds or blends. Whenever any of these are disposed of as the genuine article, a fraud is practiced which not only is objectionable on account of its economic character but equally so respecting its hygienic qualities. If a manufacturer mixes Indian corn starch with

Digitized by Google

wheat flour, as he is privileged to do under the existing law, and pays the internal revenue tax for so doing, and marks the package as so compounded and sells it as such, he has committed no offence. If, however, a portion of that package be sold to a consumer as wheat flour, a serious offence has been committed. More than that, it is an offence which may be injurious to health, since the increase in the starch content of the package over that which nature intended produces an unbalanced ration which often is injurious. Many dyspeptics find great difficulty in digesting starchy bodies, and people of this kind would be greatly injured by eating bread made of such flour. On the other hand, the great majority of people could digest a mixture of this kind with impunity and there could be no harm arising from the purchase and consumption of such bodies if the contents of the package were known.

I mention only a few of these cases which are of particular interest to the health officer and the physician. I need not increase the number of illustrations. The people of this country are at last fully awake to the necessity of protection. National and state laws are being brought into harmony for the purpose of making a more effective administration. The great medical profession stands as a unit in favor of pure foods properly labeled and the great American people believe in the same principle. The greed for gain which has flooded the country with adulterated and misbranded foods is certain to be curbed and the people will have their rights. No more effective missionary work has been done in this line than that done by the medical profession and no more active members of the medical profession have been found than those connected with the health offices of the states and cities of this country.

Now because a great victory in legislation has been won is no reason why the health officers should relax their vigilance. Their work will continue indefinitely, and it is only through a thorough administration of these wise laws, coupled with a knowledge of hygiene and public sanitation throughout every state and city of the country, that the best results can be obtained. The fact that the health officers of Vermont meet in annual convention to study the great problems which underlie public sanitation is a most hopeful sign that in that state, at least, these principles of ethics, of hygiene, and of therapeutics will be carried out to the fullest extent.

J. P. Gifford, M. D., Randolph.

I feel that I should apologize to you for having the temerity to address you on this subject. It is a subject to which the average doctor gives very little attention—in fact, too little. To begin with I wish to say, Mr. President and gentlemen, that you know as well as I do that the people of Vermont have been and are being wonderfully benefited by work along this line. I do not know a more laudable or a more important branch of health work than this, a work in which all classes are more vitally interested: important

Digitized by Google

not only to the health of the people, but to the material wealth of Vermont. I do not want to discriminate against our own country, America, but there is among Americans such a vicious, such an inordinate, yes, I may say, such an insatiable greed for gain, that there are many manufacturers who are considered ordinarily good people, who seem to think it no particular crime to adulterate their products and to offer them upon the markets.

There are, on the whole, two classes of people engaged in this work. There is the ignorant class that we find among our dairymen, using preservatives to overcome filth in the dairy and preserve the milk. This is injurious to health. Then there is the vicious class, who will introduce anything, regardless of the effect upon those consuming it.

We can readily see the importance of keeping all the impure and adulterated articles off the market. We can see what a benefit it is to the farmers of Vermont to protect their markets in butter, fruits, etc., and with a little education the farmers will see it. And when we get the agricultural class with us there is no reason why, with concerted action and proper motive in this matter, we cannot go before the legislature of our state and get any kind of legislation we wish for.

Thus far our State Board has had a very little money to work with, there being no appropriation for this line of work; but from the amount of work done as best it could, great results have already been achieved. Our markets have been flooded from right to left, from north to south with all kinds of suspicious articles, manufactured here or shipped in here from other states which were ahead of us in the matter of pure food laws. We were flooded with oleomargarine. You could find jars of jellies with splendid labels on them, representing beautiful fruits, pictured in the highest skill of the artist, and what did it represent? Not a particle of fruit juice, not a particle of fruit, you know; just paste and coloring matter, coal tar dyes, etc. And that was sold in competition with fruit. You could find tomato catsups made out of pumpkins and turnips, colored with coal tar dyes and red barn paint; you could find spices adulterated with olive stones; nutshells, sawdust and dirt; you could find candies, very bright colored sweetness, but containing plaster of paris, chromate of lead, soapstone, and other mineral substances; maple syrup containing seventy-five per cent or more of glucose or cane sugar, selling as pure maple syrup at $1.50 per gallon. This is too high a price to pay for this concoction.

We are at present living in a progressive age, in an age of imitations, fraud and food adulterations. As I have said, unscrupulous manufacturers have flooded the country with adulterated food preparations to such an extent, that but for legal enactments, it would in time depopulate our country. Someone has said "The punishment inflicted by the Almighty in the time of Noah would not now be necessary, as the adulterater of foods would, unmolested, have soon accomplished the same purpose." The regulations now require that all canned and bottled goods shall be labeled so as to give true information regarding their contents. With this system requiring honest

Digitized by Google

labeling and the advertisement of fraud, many of the above conditions will soon be done away with.

In looking over this subject, I have seen a considerable bulk of literature and scientific work, on "Problems of the Food Chemist," "Ethics of Coloring," "Food Inspection," "Standards of Foods," "Analysis of Foods" by such and such a "chemist." "Determination of Food Preservatives," etc., all of which show an endless amount of detail and thorough work, but these details are very uninteresting to me. However, I am very much interested in the results. I have in fact become so interested that I started to read the pure food laws of our own state and the regulations of the State Board in regard to the same. Some of this matter is far from interesting reading.

The question before us has been presented in many connections and details, many of which have been alluded to in the paper just presented. This is not an occasion for me to aim at fullness on so large a subject. I intend to ask your indulgence for a few moments only, on one or two phases of this subject of pure foods.

I wish to speak somewhat at length in regard to milk supply. Milk being a universal article of food, I think it is as important that the consumer obtain a supply of pure milk as a good grade of baking powder or lemon extract.

To quote from an article on the subject:—

"Milk is an example of a food material in which conditions are so favorable to the growth of bacteria, that it is never entirely free from them. It has opportunity to receive contamination from many different sources. Different substances furnish different types of bacteria, consequently milk often contains large numbers of bacteria of many different species. The causes of impure milk might be divided into three general classes:—

"1. Diseased animals and uncleanly persons.

"2. Unclean stables.

"3. Uncleanliness outside of stables.

"The purity of milk when it reaches the consumer depends upon whether some or all of these causes have been at work. Each drop of milk may contain only about a thousand of these organisms, or it may contain many millions. Milk may contain large numbers of bacteria without having any harmful ones and yet be unfit for food on account of the vast number of these organisms present.

"Conn, an authority on this subject, states that some of the common milk bacteria when present in large numbers produce poisonous substances 'which are directly injurious to the weak stomach of an infant or an invalid.' Some cases of cholera infantum and similar troubles are thought to be directly due to such causes."

What are the rights of the public in regard to the milk supply? Let us begin at the cow. A recent writer has pictured the milking process thus:—

"Particles of dirt from the hands of the milker, from the teats and udder, and from the sides of the cow fall into the pail. The pail itself may have been washed with impure water, and then imperfectly dried, or the germs

Digitized by Google

may have been floating in the air and settled in the bucket before, during and after the milking. The stables may have been in a filthy condition and the cows lying in the filth and having it adherent to their udders, drop it into the pail. The hands of the milker are often moistened with the milk to contribute greater ease and facility to the process of milking, and drops of milk thus used, laden with impurities, if not with filth, get into the milk.

"Then it often happens in many ways that the milk after it leaves the dairy is infected by the addition of water, and by varying degrees of temperature which greatly favor the rapid multiplication of the bacteria. . . . . It has been found in many instances that milk was infected in the dairy because of sickness in the home of the proprietor or of some of the milkmen."

A vigorous man in the prime of life drank a glass of milk at a railroad station; he was shortly laid low with typhoid fever of severe type and in a few days was dead. The disease was soon traced to its source in the dairy. Shall such occurrences be possible in succeeding years? Unfortunately we cannot secure cleanliness by law, but an aroused public sentiment and a proper attention and watchfulness by inspectors and health boards would compel dairymen, as a matter of policy, to be decently clean in the conduct of their business. I quote from a report of the cattle commissioners; speaking of tuberculosis they say: "One of the most potent agents in the destruction of the germ is sunlight, and more of this health-giving agency should be invited into cattle stables. It costs little and has other healthy effects in addition to its power over the tubercle bacillus. The cattle stables should be arranged on the sunny side and should be well provided with windows. We have noticed on various occasions the effect of dark, damp stables and have almost invariably found the disease in such places. We have also noticed the absence of disease under the opposite conditions. We have in mind an instance where a tuberculous animal quite advanced with the disease was kept in a herd of twenty-five cattle for two years after the disease was noticed, and upon applying the tuberculin test to the entire herd, this badly diseased cow was the only one that responded. The reason that no others had contracted the disease was the fact that the sanitary conditions of the stable were first-class, and a spot as large as a persons hand could not be found in the entire stable where the sun's rays did not penetrate. Open up the dark, damp, dingy stables and let in heaven's pure sunlight and there will be less tuberculosis."

If these things are so and there is a mitigation of the evil so easy, amounting, perhaps, to a simple remedy in many cases, may not the public protect itself? Shall consumers be indifferent when cattle are shut up in the darkest corner of a barn, where a lantern is needed at all times to see clearly; where solid and liquid manure is allowed to accumulate for weeks, yes, during three months, in a case known to the writer; where the air is so rank with damp effluvia that the unaccustomed visitor is nearly overcome; where drainage is neglected and all conditions are filthy?

We are told that the consumer has an infallible remedy in the sterilization

Digitized by Google

of milk, which has been widely practiced now for many years. This is true; but sterilized milk causes difficulty with many, if not with the majority of users. Moreover, the great mass of consumers know little or nothing about it, and for all, there are times and places in which so much painstaking is very inconvenient, if not impracticable.

In this connection I wish to say a few words in regard to summer diarrhœa in children and infants. We who are physicians note the striking regularity of the recurrence of summer diarrhœa in children. These diarrhœas are in the mind of physicians due either to heat and humidity or to bacterial infection. In my mind the heat of summer months may make the child more vulnerable, but the real cause is bacterial infection. The conviction of teachers of medicine seems to be that summer diarrhœa is the result of bacterial infection and that whatever other factors are concerned, they are not causes of themselves, but are only conditions most favorable to the development of bacteria and to the production of these poisons. Osler says, "We cannot regard heat as the direct cause but only one of the several factors." Thompson in his practice: "Summer is the worst season for these diseases owing to the depressing influence of great heat and the rapid development of bacteria in milk and other foods." Rotch: "Much can be done to prevent the occurrence of diarrhœa. Both the quality and the quantity of the food should be regulated."

Accepting these views, summer diarrhœa belongs to the class of preventable diseases. If the child is fed on food containing neither poison nor organisms capable of producing poison, the child will not be poisoned. We witness, however, an annual recurrence of this disorder and in such prevalence as to show that we have thus far accomplished very little in the way of prevention.

The question, it seems to me, reduces itself into one of education, the same as most of the questions of sanitation and preventive medicine. The persistent publishing of this infective nature of summer diarrhœa at every available opportunity by every physician and health officer will soon result in a better understanding by the public at large. Let the bacterial origin of the disease be taught in these schools, printed in the bulletins of the State Board of Health, and soon there will be found as few retaining the old ideas in regard to the cause of summer diarrhœas as there are now holding the old idea relative to puerperal septicæmia. The food of ordinary children and infants is milk. Unfortunately milk is one of the happiest media for bacteria. Owing to carelessness which I have portrayed, in dairy methods, in its transportation, and in its handling, cows' milk is very apt to be contaminated with enough adventitious matter to make it swarm with micro-organisms. Notwithstanding this, we doctors who prescribe milk—I am sorry to say a great many prescribe proprietary food preparations, for my feeling is that milk modified and weakened is the only safe, sure and unfailing food for bottle babies—but, I say those of us who prescribe milk take great care in advising a certain definite formula, but are utterly indifferent as to where the

Digitized by Google

supply of milk comes from. To most people, milk is milk. It becomes our duty as sanitarians to teach that some milk is milk, and that some milk is poison.

There are still too many all over the country who are yet contented with the old ways, who do not want to know any better. With such, moral suasion can do little; it costs too much to be neat and cleanly and nice about your premises. Public sentiment will do something, but in addition, effective action is needed. There should be competent inspection by those who have full authority. What more proper authority than the local board of health? Generally its jurisdiction is not too extended; the public must learn to value at its true worth a good health board, and expect it to discharge its full measure of responsibility, and insist upon laws which will make it most efficient. The advocates of better sanitation must not rest until such a result is secured nor until it is possible to have such reasonable and appropriate inspection of our dairy products as shall secure to all our people, the more favored and the less favored alike, a good degree of protection.

I say a good degree, that is all. The utmost care and most expensive measures of a purely official kind cannot secure perfect immunity. I am not an extremist. I refuse to be classed with too particular or overnice people. I am contending for common decency and everyday prudence. If these things are so, what I have proposed is simply "horse sense," as the saying is. In spite of the most rigid inspection, quantities of unclean and at times dangerous milk will be sold. The timid and fastidious and the sickly ones may still have good reason to sterilize. The markets will not be wholly free from tuberculous beef and trichinæ in pork, and the wise folks will continue to eat all meat quite well done.

And right here I wish to say a few words in regard to meat inspection in Vermont. I am willing to trust President Roosevelt to take care of meat inspection in Chicago. In many respects, however, meat inspection is more important in the East than in the West, because tuberculosis is more prevalent in this region, and a great many wornout dairy cattle are sent to the shambles. Many of these cattle are afflicted with tuberculosis and other chronic ailments. They are frequently emaciated and constitute the most dangerous class of beef animals. Vermont is situated in the midst of a bountiful dairy district, and is a large consumer of these animals. They are not killed in a large central plant under constant supervision, but in numerous little slaughter houses scattered throughout the state. In these establishments cattle are killed and not inspected at all. The business of these slaughter houses is conducted so irregularly that it is not possible to properly control them without having almost as many meat inspectors as slaughter houses. They exist in almost every village in the state and it is on account of this multiplicity that the problem of meat inspection becomes more complicated. Just the best remedy I do not know and I am not in position to advocate any remedy, but I do know that in many of these places

Digitized by Google

they are not over cleanly in their work and until some better plan is devised the local health board could remedy a good many existing evils.

I speak of these subjects of milk and meat inspection, because it seems to me that these articles of food are more universally used than any other, because they are as liable as any to adulteration, and because they are more liable to deterioration and more vitally connected with the life and happiness of the human race.

Life may be cheap, but good health is dear to every one who lives. Let me be well while I live and have the strength and power to work until death shall place his iron hand upon my throat and say, "I want you now," and I will not complain. But spare me from the living disease and lingering death, the results of the impurities in the necessities of life; from the work of insidious germs that sap the vitals and eat out the core of strength, till life ends in ghastly, hideous, lingering dissolution. That fate is coming to human beings about us every day. How much is due to the impurities in food and drink we cannot tell, but let us fortify ourselves against that which we know is harmful to the human system, that which must do harm to those who cannot help themselves, that which will sap the constitution, breed diarrhœas, fevers, pestilence and death, and let us have the strong arm of the law enacted by the legislature of our state to crush it out and prevent its doing its destroying work.

Dr. J. W. Jackson, Barre, Vt.

There are just one or two things which have been touched upon that are of particular interest to us and especially if we are more of a rural community.

The first thing is that of pure meat. I am speaking of the meat which is killed in this state and furnished at the private slaughter houses. We can control this matter to a large extent, but sometimes it is difficult, I know. In Barre there are two or three slaughter houses which supply meat, and I am surprised at some of the stuff which they have. For instance, a man has a sick cow. The people managing a slaughter house will give him $12 or $15 for the cow; they take it; kill it; and peddle it out in the streets. They know better than to offer it in the markets, but people are always glad to buy direct, and many prefer buying from a cart at the door rather than going to the market. With reference to the sale of bob veal, it is almost impossible to catch the offenders. I have been satisfied that men were killing veal which was only two or three weeks old. I found a case where one of the dealers had a calf less than two weeks old. I could identify this calf by a deformity of one leg, for I had had an opportunity of seeing the animal shortly after it was born, and noticed this deformity. In a few days I saw this same calf strung up in the market. If these foods are properly cooked and made palatable I don't know that there is any great danger. The Syrians consume a great deal of raw meat, and they consult me for tape worm quite often. There are some Syrians who make a practice of consulting a

Digitized by Google

physician regularly for tape worm. As a class they eat a great deal of raw meat.

The milk business is startling, but we are making a good start in the right direction. I can not add anything of material interest, but I feel as though Professor White could tell us what to look out for in the adulteration of food; what we are to guard against. In the small towns where the milk comes from several dairies, perhaps twenty, I have not been able to send in samples from them all, but as time passes, I hope to be able to get them all lined up, and they will know what that means.

NOTES OF A TYPHOID OUTBREAK IN MILL RIVER VALLEY.*

BY CHARLES S. CAVERLY, M. D., RUTLAND, VT.

Flowing off the Green Mountains, in the town of Mount Holly, Vt., in a northwesterly direction, and finally emptying into Otter Creek, is a small stream known as Mill River. It is about fifteen miles long; is a swift mountain stream, having its source in the town of Mount Holly, at the village of Mechanicsville, and receiving contributions from various branches, east and west, all fed by natural springs in the hills. Mill River flows down a narrow valley in the towns of Wallingford and Shrewsbury, breaking through a gorge in the town of Clarendon, where it turns west to reach the valley of the Otter. In winter and spring this stream is a wild torrent, often filling its banks, and in summer and fall it is correspondingly low. There are, along its course, several small villages.

At its start is the village of Mechanicsville, then, in order, those of East Wallingford, Cuttingsville, East Clarendon and Clarendon, each with less than 200 people. There are, besides, scattered farmhouses with their outbuildings along its banks.

It would be hard to imagine better natural conditions than obtain about this stream for pure wholesome water. To the casual observer, the presence of the scattered population of the valley might seem innocent of harm to the water of this stream. To anyone who is at all familiar with the history of typhoid outbreaks, these little villages would surely suggest possibilities of harm. Each village has, of course, its sewerage, though crude. Outhouses, cesspools, and sink drains are everywhere in evidence, seldom so located as not to threaten the purity of the Mill River water—especially during the times of thawing ice and snow and heavy rains, and yet it is probably true that there are few streams in New England less open to suspicion of being polluted by human excreta to a dangerous degree.

* Read before the April meeting, Rutland County Medical Society.

Digitized by Google

In October, 1905, a man working near this stream in the village of Cuttingsville, and drinking freely of the river water, was taken sick and removed to his home in Mount Holly, at some distance from the stream or any of its tributaries. There he had a lingering illness lasting most of the winter. He had several physicians, some of whom diagnosed his case as typhoid fever; one thought he had gastric ulcer, and possibly there were other theories as to the nature of his sickness. He had intestinal hemorrhage. There was no Widal test of the blood in this case. Six weeks after he went home, two children and subsequently a third in his family were taken sick. The blood from these cases responded to the Widal test. The discharges from these cases could not, by any possibility, reach Mill River or any of its tributaries.

On November 11, of the same fall, a child, living close to the Mill River in the village of Cuttingsville, was taken sick and died of typhoid fever. The diagnosis in this case was confirmed by the Widal test. There was at this house a well which was not supposed to furnish drinking water, but the water was pumped into the house for washing purposes. This well was below the level of the stream. This child may have drunk of this well water, or possibly of the water from the river itself. The stools from this case were thrown out on the bank of the stream during November and December, at a time when the ground was frozen, and covered more or less with ice and snow. There is no reason to think these stools had any sufficient disinfection. That they were washed into the stream at the first thaw cannot be doubted. This case furnishes the first direct evidence of pollution of the river water by typhoid stools that is obtainable.

The following case may be traceable thereto. It was that of a woman living below (north of) Cuttingsville in the same valley, who was taken sick the following April, and had a run of typhoid fever at the home of a relative in East Wallingford. It was learned that she had been accustomed to drink milk from pans washed in the river water. The stools from this case could not have reached the stream.

In the following August, a lad of sixteen, who was summering in Cuttingsville and was amusing himself meantime building a bridge across Mill River, drank freely of the water. He was taken sick August 20 and had a typical and moderately severe run of fever. The diagnosis in these last two cases was confirmed by blood examinations.

There were, then, up to this time, seven cases of typhoid fever, in four of which it is reasonably certain that the river water figured as the cause. The three cases in the family of the first case in Mount Holly were quite likely secondary to the advent of that case into the household. They may have been due to fly infection of food and carelessness in the management of the stools. This supposition is warranted because of the difference of opinion among the physicians as to the diagnosis of the first case.

Subsequently, during the six weeks following the last case I have mentioned, I have been able to find fifteen cases occurring among the perma-

Digitized by Google

nent or transient population of the village of Cuttingsville. Of these, one was a man who had been employed at Cuttingsville, boarding with a family in which were two cases, who went to Mount Holly when taken sick; two were in the town of Wallingford near the river, and between the villages of East Wallingford and Cuttingsville. One of these last two was a man employed at work in Cuttingsville, and the other was a child who lived only a little distance above Cuttingsville and probably visited that village frequently.

Another case which is fairly attributable to a visit to Cuttingsville was a person who had the disease in Wallingford village. And still another of the same kind was a man whose home was in the east part of Shrewsbury, where he had the disease.

The remaining ten cases all lived in Cuttingsville village. That the above mentioned twenty-two cases were all typhoid fever there can be little doubt. The diagnosis was confirmed in the majority by the Widal test.

There was some difference of opinion about the diagnosis in the first case and in one or two others at first, but there was general agreement, I believe, finally, that the diagnosis of typhoid was correct. The delay in making the diagnosis in some of the cases may have been responsible for neglect of the stools. Thereby these undisinfected stools may have added to the pollution of the river.

The attention of the State Board of Health was first drawn to this outbreak by rumors which reached it through accidental sources early in October. In looking for an explanation of the outbreak, attention was immediately drawn to Mill River, in the immediate vicinity of the village of Cuttingsville. The cases were somewhat scattered, but the brunt of the epidemic was at Cuttingsville and all were traceable directly or indirectly to a stay in this village. The first case, and at least four of the later ones, were known to have drunk directly of the river water. It was certain that all the others had drunk water in Cuttingsville, excepting the three children in the family of the first case. The people of Cuttingsville were promptly warned against the use of unboiled water from any source, and no more cases of fever developed thereafter. These facts point very directly to water pollution in this village as the cause of the epidemic. They point quite surely to the water of Mill River.

At the same time that the people here were cautioned not to drink unboiled water, a systematic examination of all sources of water and milk was instituted. The only common milk supply was examined and found pure. The water supply of the people of Cuttingsville comes from individual wells and springs chiefly. Several families have a common supply from a branch of Mill River taken out some distance east of the village, but there were no cases of fever among the users of this water. Most of the wells are below the water in the river and in the canal that diverts the water from the river at this point and conducts it through the lower part of the village. It has long been noted that the water in these wells rose and fell with the water in the river; and there can be no doubt that these are fed by river water more

Digitized by Google

or less directly. Of six well waters examined at the Laboratory of Hygiene, all were pronounced polluted. In most cases the chlorine alone would condemn the water; in only one sample was the colon bacillus found.

But water examination was not confined to the well waters at Cuttingsville village. From the first of October to the middle of January, the water of most of the wells and springs utilized for domestic purposes in Cuttingsville and several in East Wallingford, were examined, also the river water at Cuttingsville and above and below that village. Thirty-three samples of water were analyzed at the laboratory. Of this number, twenty were from springs and wells and the stream mentioned east of Cuttingsville, which furnished several families in that village, and thirteen from the river. One sample taken from the river in Mount Holly was condemned by reason of the presence of chemical impurities. In East Wallingford village, seven samples were taken. Four of these were from springs or wells and three from the river. All of these samples were condemned.

In Cuttingsville village, twenty-three samples were taken. Sixteen were from springs and wells and the east branch (mentioned as supplying several families) and seven from the river. Of these twenty-three samples, four were pronounced pure. These were all springs situated well up the side of the mountain. Twelve of the spring and well waters were condemned and all seven of the river samples.

A sample of the river water taken at East Clarendon and another taken at Clarendon were pronounced pure. These were taken in the month of January, while samples of the river water taken at the same time at East Wallingford and Cuttingsville were polluted.

In general, it may be said that the well waters examined from both East Wallingford and Cuttingsville quite uniformly contained very large amounts of chlorine. In some instances this was astonishingly high. In one instance it was reported as 5.7 parts per million; in another, 9.2; in another, 3.4; in another, 8.5; in another, 4.0; and in one instance, 44.0 parts. The ammonia nitrates and nitrites in some instances also pointed to either recent or remote pollution. It should be stated that colon bacilli were often found, too, in both river and spring and well waters. These germs were indeed found in some spring waters well above the valley.

Careful analysis of the results obtained from all these examinations of the waters in this valley seems to warrant one general conclusion, viz., that most of the waters used for domestic purposes in this valley are polluted. It is known that the Mill River carries more or less sewage from every village from Mechanicsville to Clarendon. The analysis of the water at various points confirms this, though it must not be overlooked that samples taken in mid-winter from the two villages lowest down showed no pollution. This may perhaps be explained by the season, and the purifying effects of sedimentation and aeration during its flow of three and six miles, respectively, from Cuttingsville to the points whence it was taken.

The wells and probably many of the springs at both East Wallingford and

Digitized by Google

Cuttingsville are located in sewage-saturated soil; soil that holds the animal excreta of long years of surface, cesspool and privy-vault drainage. These wells and some of the springs are probably fed by the river also.

It is undoubtedly a fact that all these waters have lacked for years to start a typhoid epidemic has been a case in either village. The case was evidently supplied sometime during the summer or fall of 1905. We cannot tell by any facts brought out by our investigation just where this case was, or at what point the water supply of the valley was first poisoned.

With the subsequent history of the epidemic in mind, it seems quite likely that the river water contained the typhoid germs at that time, and that these cases acquired the disease either from this water direct or from well water polluted by the river. If the river was thus early carrying typhoid germs, these may have found their way into it at any point between its source at Mechanicsville and Cuttingsville.

Once the infection gained an entrance into the valley, the excreta from the succeeding crop did the rest. Each succeeding case added its quota to the infection in the water. Persistent search fails to bring to light the case prior to the first here recorded. Yet our first case was not recognized as typhoid fever by the physician in attendance until it had been sick some time; indeed, I am informed by one of the physicians in this case that a doubt still exists in his mind as to that diagnosis. With all the facts of this epidemic in mind, it does not seem possible that any medical man could doubt the true diagnosis in this case. We all recognize, at times, the difficulties surrounding the early diagnosis of this disease. The continued failure, however, to recognize the first case here recorded, as one of probable typhoid, throws possible light on the true explanation of this epidemic. If this case escaped early recognition, we are forced to the conclusion that an earlier one may also have been overlooked.

Other theories suggest themselves to explain the advent of this disease into this valley. Some transient, a "walking case" seen by no doctor, may have been here, and again, the waters of Mill River may have received a contribution of typhoid excreta from some railroad train, at one of the railroad bridges over the stream.

I am aware that the problem of finding the cause of this epidemic is unsolved. Yet I feel sure that the facts here presented are not without value to the physician and the sanitarian. As I have remarked, the situation which existed in this little Green Mountain valley, prior to 1905, is in no wise different from that in many other Vermont and New England valleys.

There are many little villages among the New England hills, whose people are using river water or river-fed well and spring waters, where the importation of a case of typhoid would mean a miniature epidemic. Such epidemics are miniature only in comparison with those of larger centers of population. To the small communities affected, they work the havoc of a veritable pestilence. Excluding those cases in this outbreak that belonged to other towns, there were seventeen cases of the disease among the in-

Digitized by Google

habitants of Cuttingsville. The postmaster of that village gives its population as 175. If the city of Scranton, Pa., had suffered proportionately during its recent typhoid outbreak, there would have been some 12,000 cases, or more than ten times the number actually reported.

The practical lessons which may be fairly drawn from this Vermont outbreak are these:—

1. Practicing physicians should be careful of their diagnoses in febrile cases, whose causes are obscure. Cases of fever, running a week or more in our non-malarial region, are more apt to be typhoid than anything else. "Bilious fever," "gastric fever," "continued fever," "fall fever" and "simple fever" have no place in the modern nomenclature of disease, as they have no pathological status. These names are generally disguises for typhoid fever. Early diagnosis furnishes the key to epidemics, in typhoid fever as in other infections. Early diagnosis here means early precautions—especially early disinfection of the stools. Early diagnosis is possible with laboratory aid, and this aid is within the reach of every Vermont doctor.

2. Two or more cases of typhoid fever in a small rural village at the same time call for investigation. Such an investigation should include (a) drinking water, (b) milk, (c) all articles of food eaten raw, especially oysters. Modern research has busied itself with this disease, and among the truths it has unearthed are these: typhoid fever is not providential; its presence in a community means that the victim has swallowed the bacillus typhosus; that this bacillus has originated in a prior case. It follows logically that typhoid cases have been poisoned by the excreta of other typhoid cases. The story of this Mill River Valley outbreak shows that these other prior cases are not always easy of detection, and that the rehearsal of the above trite logic is not out of place. As observers of disease and as custodians of the public health, we may not forget or ignore our duty in the presence of this well-understood infection. If the first case in this epidemic had been promptly and intelligently investigated, it is possible its origin would have been discovered, and further cases prevented. I do not say this is more than a possibility, for I appreciate the difficulties surrounding such an investigation. Still the fact remains that we do not regard these happenings in the realm of nature—typhoid outbreaks—as anything unusual or extraordinary, and yet there is not, I believe, a practitioner in the state who is ignorant of the essential natural laws which govern these outbreaks. We get careless.

3. The villages of this Mill River Valley have probably been in danger of just such an epidemic as has now visited it, for many years. Like many other peaceful New England villages, it has long been drinking dilute sewage, drawn from innocent appearing wells and springs, whose waters may have been as sparkling and satisfying to the palate as is proverbial. The old wells and springs of the valley which are below the water in the river should all be abandoned. The mountain sides abound in springs whose

Digitized by Google

water, is abundant and pure. Each of these villages should seek such a common supply without delay.

TYPHOID FEVER IN CASTLETON.

The village of Castleton, Vt., lies just west of the Taconic range of the Green Mountains, eleven miles west of Rutland, at an elevation of 470 feet above sea level. The village is situated on a sandy plain, slightly sloping to the north, and underlaid by a coarse, gravelly subsoil. In almost any cellar in town good building sand may be found.

The Castleton River is one eighth of a mile north of the village and about seventy-five feet below the main street. The water supply is from wells and cisterns, and some twelve or fifteen families are supplied by mountain springs which run direct to these various houses. The State Normal School is supplied from an immense spring more than a mile away and is believed to be free from any possible source of contagion. This supply was analyzed at the State Laboratory in October, 1906, and pronounced *normal* water. The wells in town, while not as yet contaminated with typhoid germs, are unsafe to use for domestic purposes without boiling. For more than twenty years previous to 1906 typhoid has been almost unknown in our community, in fact, only one case has occurred in that time.

Castleton village and Lake Bomoseen, four miles away, usually entertain from 1,600 to 2,000 people each summer.

Some time early in August, 1906, a party from Brooklyn, N. Y., came here sick, hoping to get better in our vigorous Vermont air. It turned out to be a case of typhoid fever, and was subsequently removed to the Rutland hospital. This case was not reported to the health officer.

About September 1 a party came here from Springfield, Mass., also sick, the diagnosis there being malaria, but when it got here it also was typhoid.

Early in September two cases were reported among the residents of our town, or rather village. About the middle of September a case was reported at Pine Cliff Farm, four miles away, one of the employees having the disease. Again, on October 25, three cases were reported in one family in the village, and the next day one case in the family of a near neighbor.

In the family where were the three cases October 25, about November 30 two more cases came down, and in January, 1907, another case, making six cases in the one family, the latter of whom died. All the other cases in town recovered.

The population of Castleton village is about 400, there being 125 families.

The world stood aghast when Scranton, Pa., had 1,000 cases of typhoid in a population of 102,000, but scarce a ripple when Castleton village had one case in every forty of its population. The most searching investigation has failed to reveal in these cases a positive method of communication. No two families in which the disease occurred had any special communication one

Digitized by Google

with another. No food products had been passed from one family to another. No oysters had been used by any of the families. There was no common water supply. Investigation did show, however, that in the case which was not reported to the health officer and was sick here more than two weeks, that no attempt was made to disinfect the stools, and where the slops from this case were emptied was one of the worst filth and fly breeding stations that the writer has seen in many years. After the most careful consideration, the writer believes that in all probability *flies* were the *means* by which this disease in these cases was conveyed from one family to the other.

Henry D. Holton.

The graphic history given of the prevalence of typhoid fever in Mill River Valley and its environment is of especial interest. It directs your attention to the unfortunate results of a neglected case of this disease. It also emphasizes the great necessity of exercising and enforcing every precautionary measure to prevent communication of the disease to other persons.

Typhoid fever was known to the profession in the fifteenth century, continuing to perplex the medical world in an attempt to identify the causes that gave rise to it. The "humors" of the body were charged with changing their constituents from various causes, these changes being the cause of the continued fevers. Benjamin Rush, one of the signers of the Declaration of Independence, who practiced medicine before and after the Revolutionary war and was regarded as an authority in pathology, insisted that there was only one fever and that the different names given were for variations only in the intensity of one pathological state.

In 1838 doubt began to be expressed as to the identity of typhus and typhoid, the latter term having been used as a mild form of typhus for twenty years or more. Articles were written and discussions held as to what, if any, difference there was in the pathology of these two fevers. In 1851 Louis of Paris published an exhaustive report of a series of autopsies of a large number of cases of persons dying from these fevers and showed conclusively that the changes produced were entirely different, especially in the glands of the small intestines. His conclusions were that in the ulceration of these glands, in the character of the eruption and the general course pursued, these two fevers were different. So clearly did he prove these propositions that the majority of the profession accepted this view; however, there was a minority who continued to use the terms interchangeably even up to the beginning of the Civil War.

For many years the cause of typhoid fever was described as a miasm resulting from low ground water; this was Pettengoffer's theory. Others described it as gases from the decomposition of animal matter, particularly of human fæces; especially if in any way these decomposed substances gained access to water used for drinking purposes. About this time an epidemic

Digitized by Google

among the employees in the factories at Lowell, Mass., seemed to confirm this view. A young woman from New Hampshire, employed in one of the mills, returned from a visit to that state and was soon taken sick with the fever. The discharges were emptied into the brick vault of the boarding house. Soon others, numbering over two hundred, were attacked with the same fever. An examination disclosed the fact that this vault had cracked, allowing a portion of its contents to escape and that it had found its way to the well from which the drinking water of the boarding house was supplied. Here were cases arising from decomposed human fæces, but there was no suggestion of specific germs. Subsequent to Koch's announcement of his discovery of the bacilli of tuberculosis we find in Pepper's "System of Medicine," published in 1885, that Hutchinson, in his article on typhoid fever, gives as the cause of this disease "atmospheric conditions," "spontaneous origin of poisons from decomposition of animal matter, especially human fæces which had polluted water," but says nothing about germs. As late as 1892 Dr. Osler, in discussing the question of a germ being the cause of this fever, said "our knowledge on this subject is very defective." In 1895 Ernest Hart, editor of the *British Medical Journal*, published an exhaustive résumé of the cause of typhoid fever in a series of papers on "The water-born germ of typhoid fever." Many others contributed to the study of this disease and, finally, it became recognized that while filth and unsanitary conditions *prepare* the system, the disease of typhoid fever can be induced only by a specific germ. These bacteria may be found in milk, water, and oysters; may be communicated by flies or by the carelessness of the nurse in not properly caring for the discharges of both fæces and urine.

In the cases where the disease has been produced by eating shell fish contaminated by the typhoid bacilli the disease has developed, usually, within twenty-four to forty-eight hours, the onset being manifested by disturbance of the alimentary canal, with chills followed by fever.

The most pronounced epidemic in recent years in the state was at Windsor in 1894, when within a few days 160 cases developed, resulting in eighteen deaths. Investigation showed that a man came to town from a New Hampshire village where they were having typhoid fever, to a house on a hillside where the drainage was into a small brook which was tributary to the stream that furnished the village reservoir with water. He was slightly ill at the time, having diarrhœa with fever; his discharges were thrown into the usual outhouse, standing on the sidehill near the house. This was in March; a rain came, with a thaw; the melting snow and rain water flowed down the sidehill, taking with it the contents of the outhouse vault and, in this way, the water in the reservoir became polluted with the discharges from this typhoid fever patient, with the result before stated.

The other epidemic was in Barre, in 1897, 140 cases with eighteen deaths. The cause of this was from similar circumstances: a person coming from another state sick with typhoid fever; his discharges were thrown out on

Digitized by Google

the ground and were washed into the stream near by, thus polluting the source of the city's water supply.

We cannot urge too strongly the necessity that great care should always be taken in disposing of the secretions of cases of this disease.

The following table gives the deaths since registration was first established in this state:—

REGISTRATION BEGAN IN THIS STATE IN 1857.

The deaths for each decade from Typhoid Fever have been as follows:—

For the first ten years, ending with		1866,	were	2,601
For the second "	"	1876,	"	2,345
For the third "	"	1886,	"	1,289
For the fourth "	"	1896,	"	1,099
For the fifth "	"	1906,	"	933
Total for 50 years,				8,267
For the first 25 years the deaths were				5,839
For the second 25 years the deaths were				2,428
Annual average for first 25 years,				$233\frac{14}{25}$
Annual average for second 25 years,				$97\frac{3}{25}$

The first five years there was an average of 870; the last five years 406. Five towns which unfortunately have had a polluted water supply, resulting in cases of typhoid at all times of the year, have had in the last five years 672 cases with 54 deaths, which is 13½ per cent of all deaths from this disease in the state. During 1906 43 per cent of all deaths from typhoid fever occurred in these towns. We are pleased to know that these towns each have, or are to have, a pure water supply.

Digitized by Google

REPORT OF EXAMINATIONS AT THE LABORATORY FROM FEBRUARY 20 TO MAY 10, 1907

Miscellaneous Food and Drug Analyses Made During February, March, April, and up to May 10, 1907

Catarrh and Asthma Remedies

Laboratory Number	Article	Manufacturer	Dealer	Cocaine		Label	
				Absent	Present	Correct	Incorrect
46326	Kondon's Catarrhal Jelly	Kondon Mfg. Co., Minneapolis, Minn.	W. L. Gokey, Bennington	1	.....	1	.....
46327	Bronchial Tablets	W. L. Gokey, Bennington	W. L. Gokey, Bennington	1	.....	1	.....
46328	Dr. Marshall's Catarrh Snuff	F. C. Keith, Cleveland, O.	J. H. McKeon, Bennington	1	.....	.....	1
46329	Almond Snuff	L. B. Lord & Son, Burlington	B. A. Quinlan, Bennington	1	.....	1	.....
46335	Ely's Cream Balm	Ely Bros., New York	G. E. Adams, Fair Haven	1	.....	1	.....
46962	Allen's New Treatment for Catarrh	Allen S. Olmsted, Le Roy, N. Y.	W. J. Henderson & Co., Burlington	1	.....	.....	1
46961	Booth's Hyomei	Booth's Hyomei Co., Buffalo, N. Y	"	1	.....	1	.....
46960	Ozojell	Ozojell Co., New York	"	1	.....	1	.....
46959	Coryzon	Coryzon Co., New York	"	.....	1	.....	1
46958	Rader's German Snuff	Smith, Doolittle & Smith, Agts., Boston	"	1	.....	.....	1
46957	Piso's Remedy for Catarrh	Piso Co., Warren, Pa.	"	1	.....	1	.....
46956	Hakka Cream	A. P. Bush & Co., Boston	"	1	.....	1	.....
47569	Dr. Sage's Catarrh Remedy	World's Dispensary Medical Association, Buffalo, N. Y.	F. H. Parker, Burlington	1	.....	.....	1
47571	Dr. Agnew's Catarrhal Remedy	Anglo-American Medicine Co., Chicago, Ill.	R. B. Stearns & Co., Burlington	.....	1	.....	1
47569	Dr. A. W. Chase's Catarrh Cure	Dr. A. W. Chase Medicine Co., Buffalo, N. Y.	"	1	.....	.....	1
	Total, 15			13	2	8	7

Digitized by Google

Lab. No.	Date	Brand	Cost	Manufacturer	Dealer and Town	Ash in 10 Grs.	Color	Standard	Remarks
46359	2-18-07	Chocolate Fudge	20c.	H. D. Scutakis, Burlington	Concord Candy Kitchen, Burlington	.098	.....	Above	Trace of iron
46360	"	Chocolate Cream	20c.	" " "	" " "	.017	.....	"	" "
46361	"	Chocolate Caramel	15c.	" " "	" " "	.088	.....	"	" "
46362	"	Mixture	15c.	" " "	" " "	.088	.....	"	.....
46365	"	Fudge	15c.	" " "	" " "	.059	.....	"	.....
46366	"	Mixture	20c.	Geo. Anderson & Co., Burlington	Burlington Conf. Co., Burlington	.093	.....	"	Trace of iron
46369	"	Caramel	15c.	" " "	" " "	.042	.....	"	.....
46370	"	Wintergreen Cream	20c.	" " "	" " "	.026	Fuchsine	"	.....
46371	"	Fudge	20c.	" " "	" " "	.054	.....	"	Trace of iron
46372	"	Chocolate Cream	20c.	Wing Bros. & Hart, Albany, N. Y.	F. W. Woolworth & Co., Burlington	.108	.....	"	" "
46373	"	Red Cherries	10c.	F. G. Brewster & Co., New York	" " "	.....	Eosin	"	.....
46374	"	Mixture	10c.	Wing Bros. & Hart, Albany, N. Y.	" " "	.050	.....	"	.....
46375	"	Caramels	20c.	Kibby Bros., Springfield, Mass.	" " "	.061	.....	"	.....
46376	"	Fudge	10c.	Bradley & Smith	" " "	.065	.....	"	Trace of iron
46377	"	Chocolate	10c.	Kibby Bros., Springfield, Mass.	" " "	.042	.....	"	" "
46586	2-27-07	Glucose	.....	American Glucose Co.	Arbuckle & Co., Burlington	.....	.....	"	Trace sulphites
46600	"	"	.....	" " "	Crystal Conf. Co., Burlington	.....	.....	"	" "
46617	"	"	.....	" " "	Concord Candy Kitchen, Burlington	.....	.....	"	" "
46615	"	"	.....	" " "	B. L. Kent, Burlington	.....	.....	"	" "
46616	"	"	.....	" " "	Burlington Conf. Co., Burlington	.....	.....	"	" "
46588	2-28-07	Sugar	.....	.....	Arbuckle & Co., Burlington	.001	.....	"	.....
46601	"	"	.....	.....	Crystal Conf. Co., Burlington	.008	.....	"	.....
46609	"	Chocolate	.....	.....	" " "	.139	.....	"	Trace of iron
46841	3- 4-07	Cherub Kiss	15c.	Ideal Mfg. Co., Portland, Me.	Geo. H. Cross, St. Johnsbury	.184	.....	"	Trace sulphites
46842	"	Horehound	10c.	Geo. H. Cross, St. Johnsbury	" "	.008	.....	"	" "
46843	"	Chocolate Cream	12c.	" "	" "	.074	.....	"	Trace sulphites; trace of iron

Digitized by Google

CANDY (Continued)

Lab. No.	Date	Brand	Cost	Manufacturer	Dealer and Town	Ash in 10 Grs.	Color	Standard		Remarks
46844	3- 4-07	Nutcos	15c.	Geo. H. Cross, St. Johnsbury	Geo. H. Cross, St. Johnsbury	.....	.....	Above	.....	Trace sulphites
46845	"	Imperial Kisses	15c.	Atwood Conf. Co., St. Johnsbury	Atwood Conf. Co., St. Johnsbury	.089	.....	"	.....	" "
46846	"	Kisses	15c.	" " "	" " "	.049	.....	"	.....	" "
46847	3- 6-07	Chocolate Chips	25c.	Concord Candy Kitchen, St. Johnsbury	Concord Candy Kitchen, St. Johnsbury	.178	.....	"	.....	Trace sulphites; trace of iron
46848	"	Glucose	.....	.....	Atwood Conf. Co., St. Johnsbury	.....	.....	"	.....	Trace sulphites
46849	3-20-07	Butter Scotch	20c.	G. I. Green, St. Johnsbury	G. I. Green, St. Johnsbury	.085	.....	"	.....	" "
46850	"	Horehound	20c.	" "	" "	.008	.....	"	.....	" "
46852	3-27-07	Kisses	20c.	Stacy's, Rochester, N. Y.	Concord Candy Kitchen, St. Johnsbury	.191	.....	"	.....	" "
46853	"	Kisses	20c.	G. I. Green, St. Johnsbury	G. I. Green, St. Johnsbury	.073	.....	"	.....	" "
46855	"	Caramel	20c.	Concord Candy Kitchen, St. Johnsbury	Concord Candy Kitchen, St. Johnsbury	.092	.....	"	.....	" "
46856	"	Stick	1c.	Arbuckle & Co., Burlington	" " "	.032	Anilin	"	.....	Trace sulphites; trace of iron
		Total, 37						37		

Digitized by Google

Lab. No.	Dealer	Manufacturer	Total ash per cent	Soluble ash per cent	Insoluble ash per cent	Alkalinity soluble ash 1 gram	Alkalinity insoluble ash 1 gram	Malic acid	Lead subacetate	Basis	Standard		Remarks
											Above	Below	
47775	Freeman Scott, Brattleboro.	L. J. Johnson, W. Brattleboro	.82	.61	.21	.60	.44	.54	1.0	Syrup	1	.....	.....
47776	R. H. Amidon, Brattleboro..	J. S. Wood, W. Brattleboro..	.67	.51	.16	.60	.36	.46	1.9	"	1	.....	.....
47777	Freeman Scott, Brattleboro.	Morten Thurber, W. Halifax	.65	.50	.15	.51	.40	.54	1.5	"	1	.....	.....
47778	F. C. Clark, Brattleboro.....	C. Dalrymple, Marlboro.....	.58	.44	.14	.56	.46	.51	1.6	"	1	.....	.....
47779	F. C. Clark, Brattleboro.....	.....	.86	.53	.33	.72	.58	.51	2.0	Sugar	1	.....	.....
47864	L. B. Brooks, Montpelier.....	.....	.63	.41	.22	.40	.50	...	.9	Syrup	1	.....	.....
48067	F. A. Kehoe, Gassetts.....	.....	.66	.45	.21	.56	.50	...	1.8	"	1	.....	.....
47780	A. E. Miller, Brattleboro	.....	.51	.38	.13	.50	.36	...	2.2	"	1	.....	Maple cream..
47792	Grange Store. Brattleboro...	L. J. Johnson, W. Brattleboro	.85	.49	.36	.75	.60	.69	4.8	Sugar	1	.....	.....
48398	Campbell & Greeley, Rochester.....	George Perkins, Rochester..	.48	.32	.16	.40	.61	.24	1.0	Syrup	1	.....	.....
48132	F. E. Perkins, Burlington....	W. W. Kimball, Westford....	.51	.34	.17	.44	.45	...	1.4	"	1	.....	.....
48131	F. E. Perkins, Burlington....	F. B. Edwards.....	.48	.31	.17	.62	.44	.51	1.8	"	1	.....	.....
48133	F. E. Perkins, Burlington....	L. E. Dunlap.....	.64	.43	.21	.60	.54	.54	1.4	"	1	.....	.....
47783	Grange Store, Brattleboro...	J. T. Bennett, W. Brattleboro	.76	.42	.34	.56	.65	.48	4.9	Sugar	1	.....	.....
47781	A. E. Miller, Brattleboro	.....	.51	.37	.14	.46	.40	.30	1.1	Syrup	1	.....	Maple cream..
47784	H. S. Goodenough, Bra'boro	.....	.55	.39	.16	.43	.46	.46	1.5	"	1	.....	.....
47785	David Savage, Bellows Falls	C. E. Ball, Rockingham.....	.57	.42	.15	.48	.44	.47	1.3	"	1	.....	.....
47786	F. B. F. Grocery Co., Bellows Falls.....	J. Severance, Bartonsville...	.57	.42	.15	.46	.42	.42	1.8	"	1	.....	.....
47787	A. H. Fuller, Bellows Falls..	J. D. Jacobs, Bellows Falls..	.57	.38	.19	.50	.54	...	1.8	"	1	.....	.....
47788	P. Baldasaro, Bellows Falls..	.....	.65	.45	.20	.60	.58	...	1.8	"	1	.....	.....
48346	Wm. Suckstorff, Burlington.	F. O. Thomas, Jeffersonville.	.55	.38	.17	.46	.42	...	1.4	"	1	.....	.....
48347	D. Mansur, Burlington.....	.....	.73	.36	.37	.44	.78	...	2.8	"	1	.....	.....
48348	D. Bowen, Burlington.....	F. Melendy, Jeffersonville...	.52	.30	.22	.34	.57	...	1.6	"	1	.....	.....
48349	C. B. & A. M. Bacon, Bur'gton	F. Carpenter, Burlington....	.53	.35	.18	.40	.42	...	1.2	"	1	.....	.....
48350	George Saiger, Burlington...	F. Carpenter, Burlington....	.57	.41	.16	.42	.34	...	1.4	"	1	.....	.....
48694	Thomas Reeves.....	.....	.50	.34	.16	.36	.38	...	1.2	"	1	.....	.....
Total, 26											26		

Digitized by Google

MISCELLANEOUS

Lab. No.	Date	Article	Manufacturer	Dealer and Town	Standard		Remarks
46895	2- 9-07	Preservaline	Preservaline Mfg. Co., New York	E. D. Howe, Essex Junction	.....	Below	A weak solution of formalin
46900	3- 6-07	Bread	Fassett & Co., Burlington	Mrs. J. G. Reed, Burlington	Above	.....	.....
46984	3- 7-07	Honey	A. Mowsovitz	A. Mowsovitz, Burlington	"	.....	.....
47568	3-25-07	Beef	.....	C. U. Johnson, W. Berkshire	.....	Below	Lung tissue shows pneumonia
47593	3-26-07	Pork	.....	F. M. Rogers, Alburgh	Above	.....	.....
47708	3-29-07	Beef	.....	H. L. Willson, Arlington	"	.....	.....
48345	4-26-07	Cheese	.....	J. C. Gleason, Ludlow	"	.....	No poisons found
48384	4-29-07	Cream	.....	G. R. Sanborn, New Haven	.....	Below	Butyric acid; bacteria present
48497	4-27-07	Beef	.....	H. L. Willson, Arlington	.....	"	Tubercular
48622	5- 2-07	"	.....	Geo. H. Newton, Cambridge	.....	"	"
48658	5- 4-07	Trout	.....	J. C. Kenney, Sharon	.....	"	Infected with trematodes
		11			5	6	

Digitized by Google

MILK ABOVE STANDARD EXAMINED DURING FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
46642	2-20-07	Charles Laflame	Enosburg Falls	14.76	9.5	5.2	Normal	
46643	"	M. L. Sharlow	" "	13.33	9.5	3.8	"	
46646	"	Add Wallace	" "	15.73	9.7	6.0	"	
46652	"	P. J. Hayes	" "	15.23	9.2	6.0	"	
46653	"	John Fish	" "	12.57	8.7	3.8	"	
46664	2-21-07	Christopher Amidon	Bennington			22.0		Cream
46669	"	Charles Weeks	St. Johnsbury	14.60	8.6	6.0	Normal	
46671	"	T. J. Morier	"	13.40	8.5	4.9	"	
46672	"	David Knowlton	"	13.55	9.1	4.4	"	
46697	2-22-07	L. F. Rudd	Bennington	14.27	9.27	5.0	"	
46787	2-27-07	Z. Campbell	St. Albans	14.27	9.27	5.0	"	
46788	"	R. A. Warner	"			8.8	"	
46790	"	J. N. Warner	"	14.25	8.85	5.4	"	
46830	3- 2-07	Edd Garrow	Enosburg Falls	14.51	9.31	5.2	"	
46833	"	W. H. McAllister	" "	15.74	9.94	5.8	"	
46837	"	Tom Comstock	" "	14.19	9.89	4.3	"	
46893	3- 4-07	C. E. Cambridge	Hartford	13.42	8.92	4.5	"	
46897	"	E. B. Newton	"	12.82	9.12	3.7	"	
47174	3-12-07	W. L. Pearsons	Montpelier	13.18	8.88	4.3	"	
47176	"	Bingham Marvin	"	13.42	8.92	4.5	"	
47341	3-18-07	Homer Peniman	St. Johnsbury			6.8	"	
47339	"	M. F. Hospital	Burlington	12.95	8.75	4.2	"	
47338	"	"	"	13.10	9.00	4.1	"	
47388	"	J. E. Maynard	"			6.2	"	Sample submitted by dealer
47384	"	Mrs. F. Saltus	"			7.7	"	Sample submitted by dealer
47385	3-19-07	Frank Lafayette	Barre	13.16	8.66	4.5	"	
47387	"	F. E. Fletcher	"	14.70	9.50	5.2	"	
47389	"	E. H. Bancroft	"	14.40	8.60	5.8	"	
47393	"	W. F. Shepard	"	13.77	9.27	4.5	"	
47394	"	Harry Blanchard	"	12.43	8.83	3.6	"	
47472	3-22-07	Harry London	Burlington	14.02	9.02	5.0	"	Submitted
47524	"	Crystal Conf. Co	"			36.9	"	Cream. Submitted
47740	4- 1-07	C. K. Tyler	"	13.30	8.90	4.4	"	Submitted
47852	4- 2-07	A. G. Rice	Bellows Falls	13.31	9.11	4.2	"	
47853	"	"	" "	12.82	9.12	3.7	"	
47860	"	C. H. Spaulding	" "	13.18	8.78	4.3	"	
47861	"	D. D. Drislane	" "	12.09	8.69	3.4	"	
47955	4- 6-07	Dr. Sam Sparhawk	Burlington	13.06	9.06	4.0	"	Submitted
47991	4- 8-07	Carl Hartham	Woodstock			18.	"	Cream
47992	"	George Lockwood	"	14.37	8.97	5.4	"	
47993	"	Edw. H. Williams	"	14.88	9.38	5.5	"	
47995	"	Norman Case	"	14.27	9.27	5.0	"	
48008	"	Andrew Tredo	Vergennes	13.31	9.11	4.2	"	
48009	"	Louis Raymond	"	13.43	9.13	4.3	"	
48014	"	George Town	Morristown	13.42	8.92	4.5	"	
48026	4- 9-07	W. S. Clark	St. Albans	14.15	9.25	4.9	"	
48027	"	R. A. Warner	"	13.91	9.21	4.7	"	
48028	"	F. O. Jackson	"	14.03	9.33	4.7	"	
48029	"	J. N. Warner	"	12.94	9.04	3.9	"	
48032	"	E. H. Brooks	"			8.0	"	
48059	4-10-07	O. T. Hubbard	Rochester	13.16	8.66	4.5	"	
48061	"	W. H. Campbell	"	13.66	8.96	4.7	"	
48062	"	H. P. Nason	"	14.87	9.17	5.7	"	
48063	"	Clate Hubbard	"	13.79	9.29	4.5	"	
48064	"	E. L. Pierce	"	15.00	9.40	5.6	"	
48065	"	E. Downer	"	15.24	9.44	5.8	"	
48078	4-11-07	F. S. Collins	Burlington	13.52	8.72	4.8	"	Submitted
48065	4-12-07	J. C. Rich	Northfield	13.78	8.98	4.8	"	
48066	4-10-07	Willis H. Craigue	Springfield			7.8	"	
48148	4-13-07	Henry Taylor	"	14.02	9.02	5.0	"	
48201	4-16-07	F. L. Day	"	13.67	9.27	4.4	"	
48151	4-13-07	Fred Stevens	Island Pond	12.70	9.00	3.7	"	

Digitized by Google

MILK ABOVE STANDARD EXAMINED DURING FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907 (Continued)

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
48196	4-16-07	D. L. Childs	Bethel	.....	....	11.4	Normal	.....
48282	4-22-07	Davis & Pond	Rutland	13.30	9.00	4.3	"	.....
48283	"	R. H. Fintell	"	14.02	9.02	5.0	"	.....
48289	"	John A. Mead	"	12.60	8.70	3.9	"	.....
48290	"	T. G. Hart	"	13.54	9.34	4.2	"	.....
48299	"	E. S. Clifford	Lyndon	12.45	8.75	3.7	"	.....
48300	"	J. J. Naigde	"	13.52	8.72	4.8	"	.....
48301	"	Perley Davis	"	15.12	9.32	5.7	"	.....
48376	4-23-07	A. H. Jaquith	Brattleboro	13.67	9.17	4.5	"	.....
48378	"	Dunklee & Randall	"	13.16	8.66	4.5	"	.....
48444	4-25-07	E. E. Mather	"	13.54	9.04	4.5	"	.....
48445	"	L. A. Howard	"	12.93	8.93	4.0	"	.....
48447	"	Whitney	"	.....	....	22.5	"	Cream
48411	"	George Jenkins	Bradford	14.50	9.00	5.5	"	.....
48412	"	C. H. Corlis	"	14.06	9.46	4.4	"	.....
48413	"	John Strong	"	14.73	9.03	5.7	"	.....
48414	"	B. S. Hooker	"	13.78	8.98	4.8	"	.....
48415	"	Robert Peavey	"	13.51	8.51	5.0	"	.....
48416	"	George W. Brown	"	14.39	9.29	5.1	"	.....
48417	"	T. J. Albee	"	13.05	8.85	4.2	"	.....
48422	4-24-07	Bingham Marvin	Montpelier	12.68	8.58	4.1	"	.....
48425	"	George Campbell	"	13.18	9.08	4.1	"	.....
48426	"	W. H. Lombard	"	14.15	9.25	4.9	"	.....
48431	"	W. L. Persons	"	13.05	8.85	4.2	"	.....
48434	"	W. D. Walker	"	13.55	9.15	4.4	"	.....
48435	"	Leland Brothers	"	12.81	8.91	3.9	"	.....
48436	"	W. D. Hill	"	13.05	8.85	4.2	"	.....
48524	4-29-07	C. E. Cambridge	Hartford	13.31	9.11	4.2	"	.....
48526	"	David Mossey	"	13.02	8.82	4.2	"	.....
48527	"	E. A. O'Neil	"	13.31	9.11	4.2	"	.....
48528	"	E. B. Newton	"	13.43	9.23	4.3	"	.....
48581	5- 1-07	H. J. Novak	Rutland	12.45	8.75	3.7	"	.....
48585	"	T. Hart	"	13.43	9.13	4.3	"	.....
48586	"	Leigh Hunt	"	12.69	8.79	3.9	"	.....
48588	"	E. E. Lord	"	13.43	9.13	4.3	"	.....
48592	"	Ray Russell	"	12.69	8.79	3.9	"	.....
48593	"	O. S. Frost	"	12.50	8.70	3.8	"	.....
48594	"	Dunn Estate	"	12.32	8.52	3.8	"	.....
48595	"	D. A. Lillie	"	13.10	8.80	4.3	"	.....
48597	"	A. A. Plumbley	"	12.44	8.54	3.9	"	.....
48601	"	John A. Mead	"	13.16	8.66	4.5	"	.....
48602	"	G. A. Davis	"	13.05	8.85	4.2	"	.....
48604	"	Rutland Creamery	"	12.32	8.52	3.8	"	.....

Total, 105

Digitized by Google

MILK BELOW STANDARD EXAMINED DURING FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
46636	2-20-07	Martin J. Cone.....	Bennington.....	13.27	8.6	4.7	Normal	Dirty
46637	"	"	"	12.32	8.5	3.8	"	"
46638	"	Geo. Perkins.....	Hardwick	13.76	9.0	4.7	Pus & streptococci	"
46639	"	Russell Holton.....	"	12.18	8.2	4.0	Normal	Dirty; low in solids not fat
46640	"	Eddie Bridgemann.	"	13.78	8.9	4.8	"	Dirty
46641	"	Chas. Whitney.....	"	14.28	9.4	4.8	"	"
46644	"	F. C. Kimball.....	Enosburg Falls	.....	....	8.4	"	"
46645	"	J. A. Gibson	" "	12.07	8.3	3.8	"	Dirty; low in solids not fat
46647	"	David Benoit.....	" "	12.93	8.8	4.1	Pus	.....
46648	"	W. H. Best.....	" "	14.04	9.4	4.6	Normal	Dirty
46649	"	G. H. Abell.....	" "	13.92	9.4	4.5	"	"
46650	"	V. A. Goiner.....	" "	14.39	9.2	5.1	"	"
46651	"	V. A. Irish.....	" "	13.80	9.4	4.4	Pus	.....
46665	2-21-07	John L. Grady.....	St. Johnsbury	13.55	9.1	4.4	Normal	Dirty
46666	"	A. R. Taft.....	"	13.55	9.1	4.4	"	"
46667	"	Harry Scott.....	"	15.23	9.2	6.0	"	"
46668	"	W. H. Wright.....	"	12.90	8.7	4.2	"	"
46670	"	Thomas Belanger..	"	.....	....	6.3	"	"
46673	"	E. & T. Fairbanks..	"	13.18	9.1	4.1	"	"
46674	"	Chas. Thayer.....	"	13.28	8.7	4.6	"	"
46675	"	Hartman White....	"	13.31	8.3	5.0	"	Dirty; low in solids not fat
46789	2-27-07	E. Warner.....	St. Albans	12.60	9.2	3.4	"	Dirty
46791	"	K. McGrath	"	13.16	8.66	4.5	"	"
46827	3- 2-07	Jack Chadwick.....	Enosburg Falls	.....	....	6.7	"	"
46828	"	C. Burt.....	" "	.....	....	8.0	"	"
46829	"	S. A. Davis.....	" "	12.55	8.35	4.2	"	Low in solids not fat
46831	"	Edd Libby.....	" "	14.16	9.46	4.7	"	Dirty
46832	"	Frank Myette.....	" "	14.98	8.98	6.0	"	"
46834	"	A. H. Wright.....	" "	.....	....	8.4	"	"
46835	"	H. Myatt.....	" "	13.44	9.34	4.1	"	"
46836	"	John Beauloc.....	" "	12.10	8.90	3.3	"	"
46891	3- 4-07	Frank Norcross....	Hartford	13.17	8.77	4.4	"	"
46892	"	P. J. O'Connor.....	"	13.50	8.40	5.1	Pus	"
46894	"	David Mossey.....	"	15.37	9.77	5.6	Normal	"
46895	"	W. H. Coutermarsh	"	14.02	9.12	4.9	"	"
46896	"	E. A. O'Neil.....	"	13.17	8.77	4.4	"	"
46898	"	R. H. Simmonds....	"	.....	....	18.9	"	" cream
46899	"	P. M. Dutton.....	"	15.13	9.63	5.5	"	"
47175	3-12-07	N. M. Harris.....	Montpelier	14.03	9.23	4.8	"	"
47177	"	F. R. Hayden.....	"	14.76	8.36	5.4	"	Dirty; low in solids not fat
47178	"	Leland Bros.....	"	13.18	8.88	4.3	"	Dirty
47179	"	Geo. O. Hale.....	"	13.54	9.04	4.5	"	"
47180	"	G. E. Bliss & Co....	"	13.90	9.00	4.9	"	"
47181	"	W. D. Hill	"	13.28	4.68	4.6	"	"
47182	"	Geo. Lawrence.....	"	13.42	8.92	4.5	"	"
47183	"	Geo. O. Hale.....	"	13.30	8.90	4.4	Pus & streptococci	.....
47184	"	W. D. Walker.....	"	13.79	9.19	4.6	Normal	Dirty
47342	3-18-07	W. F. Welch.....	St. Johnsbury	14.27	9.27	5.0	"	"
47386	3-19-07	C. P. Pitkins.....	Barre	13.55	9.15	4.4	"	"
47388	"	L. B. Dodge.....	"	14.37	9.47	4.9	"	"
47390	"	E. K. Hutchinson...	"	14.03	9.23	4.8	"	"
47391	"	Jessie Pratt.....	"	13.73	9.23	4.5	"	"
47392	"	Den Camp	"	12.03	8.33	3.7	"	Low in solids not fat
47424	"	C. K. Tyler.....	Burlington	12.11	9.11	3.0	"	Low in fat; submitted
47429	"	—— Rublir.....	Windsor	14.00	8.60	5.4	"	Dirty
47395	"	L. B. Dodge.....	Barre	13.54	8.94	4.6	"	"
47851	4- 2-07	H. Whitton.....	Bellows Falls	13.31	9.11	4.2	"	"

Digitized by Google

MILK BELOW STANDARD EXAMINED DURING FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907 (Continued)

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
47854	4- 2-07	A. L. Young.....	Bellows Falls	12.57	8.77	3.8	Normal	Dirty
47855	"	E. E. Green.....	" "	12.21	8.81	3.4	"	Very dirty
47856	"	H. S. Wright.....	" "	13.18	9.08	4.1	"	Dirty
47857	"	H. C. Allen.....	" "	12.93	8.83	4.1	"	"
47858	"	Albert Whitten.....	" "	13.56	9.36	4.2	"	"
47859	"	S W. Kendall.....	" "	14.63	9.33	5.3	"	"
47862	"	J. H. Wright.....	" "	13.82	9.62	4.2	"	"
47954	4- 6-07	Dr. Sam Sparhawk.	Burlington	13.05	8.85	4.2	"	Dirty;submitted
47956	"	"	"	13.56	9.36	4.2	"	Dirty;submitted
47994	4- 8-07	Jos. Hartham.....	Woodstock	.....	....	6.4	"	Dirty
47996	"	H. H. Wallace.....	"	13.39	8.59	4.8	"	"
48025	4- 9-07	H. C. Blake.....	St. Albans	12.82	9.02	3.8	"	"
48030	"	K. McGrath.....	"	13.18	9.18	4.0	"	"
48031	"	Z. Campbell.....	"	14.02	9.12	4.9	"	"
48058	4-10-07	Geo. Harvey.....	Rochester	12.32	8.52	3.8	"	"
48060	"	O. G. Martin.....	"	13.05	8.85	4.2	"	"
48094	4-12-07	Chas Fowler & Son	Northfield	12.81	8.81	4.0	"	"
48096	"	Jesse Hedges.....	"	14.37	8.87	5.5	"	"
48097	"	F. P. Houston	"	13.40	8.70	4.7	"	"
48067	4-10-07	F. C. Murdock.....	Springfield	13.30	8.90	4.4	"	"
48149	4-13-07	O. W. & S. M. Bishop	"	15.31	8.31	4.0	"	Low in solids not fat
48150	"	C. F. Tracy.....	Island Pond	14.47	8.47	6.0	"	Dirty; low in solids not fat
48152	"	Alvin Stevens.....	"	13.28	9.08	4.2	"	Dirty
48153	"	L. C. Hall.....	"	11.47	8.17	3.3	"	Dirty; low in total solids & solids not fat
48195	4-16-07	Chas. Burgess.....	Bethel	12.91	8.41	4.5	"	Dirty; low in solids not fat
48197	"	A. P. Northrop.....	"	11.26	8.76	2.5	"	Dirty; low in total solids and fat
48198	"	R. W. Morse.....	"	13.52	8.72	4.8	"	Dirty
48199	"	W. A. Dunham.....	"	12.55	8.35	4.2	"	Dirty; low in solids not fat
48200	"	A. J. Graham.....	"	14.76	9.36	5.4	"	Dirty
48277	4-22-07	A. K. Candlish.....	Rutland	13.39	8.59	4.8	"	"
48278	"	"	"	13.28	8.68	4.6	"	"
48279	"	L. Avery.....	"	13.30	8.90	4.4	"	"
48280	"	D. A. Lillis.....	"	12.75	7.55	5.2	"	Dirty; low in solids not fat
48281	"	C. B. Beebe.....	"	13.16	8.76	4.4	"	Dirty
48284	"	Leigh Hunt.....	"	12.92	8.70	4.2	"	"
48285	"	Ray Russell.....	"	13.30	8.90	4.4	"	"
48286	"	O. S. Frost.....	"	12.33	8.73	3.6	"	"
48287	"	B. F. Heath.....	"	12.80	8.70	4.1	"	"
48288	"	A. Premo	"	12.81	8.91	3.9	"	"
48291	"	A. A. Plumbley.....	"	13.17	8.97	4.2	"	"
48292	"	Rutland Creamery.	"	12.57	8.87	3.7	"	"
48293	"	C. G. Marks.....	"	13.05	8.85	4.2	"	"
48294	"	Temple Bros.....	"	14.02	9.12	4.9	"	"
48295	"	H. J. Novak	"	12.20	8.60	3.6	"	"
48296	"	Dunn Farm.....	"	12.79	8.39	4.4	"	"
48371	4-23-07	H. M. Barrett.....	Brattleboro	14.02	9.02	5.0	"	"
48372	"	Arad Hunt.....	"	.....	....	8.1	"	"
48373	"	H. H. Winchester..	"	13.30	8.90	4.4	"	"
48374	"	C. A. Barber.....	"	12.57	8.77	3.8	"	"
48375	"	W. M. Randall.....	"	13.15	8.45	4.7	"	Dirty; low in solids not fat
48377	"	H. G. Smith.....	"	13.04	8.80	4.4	"	Dirty

Digitized by Google

MILK BELOW STANDARD EXAMINED DURING FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907 (Continued)

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
48379	4-23-07	A. E. Torrey.....	Brattleboro	12.91	8.41	4.5	Normal	Dirty; low in solids not fat
48380	"	J. L. Grover.....	"	12.79	8.39	4.4	"	Dirty; low in solids not fat
48443	4-25-07	J. L. Grover.....	"	13.54	8.94	4.6	"	Dirty
48446	"	M. R. Robbins.....	"	12.70	8.90	3.8	"	"
48418	"	T. J. Albee.....	Bradford	13.05	8.85	4.2	"	"
48420	"	John Worthley.....	"	11.73	8.63	3.1	"	Low in total solids & fat
48388	"	A. K. Reed.....	Windsor	13.16	8.76	4.4	"	Dirty
48467	4-26-07	Edwin Piper.....	Middlebury	13.18	8.88	4.3	"	"
48468	"	Valentine Varney..	"	.....	.....	6.8	"	"
48466	"	M. C. Keese.....	"	12.80	8.60	4.2	"	"
48469	"	Z. Campbell.....	St. Albans	.....	.....	6.6	"	"
48331	4-22-07	W. H. Lathrop.....	Sunderland	12.31	8.31	4.0	"	Dirty; low in solids not fat
48421	4-24-07	G. E. Bliss & Co....	Montpelier	12.68	8.58	4.1	"	Dirty
48424	"	Montpelier Cream'y	"	13.30	8.98	4.4	"	"
48427	"	N. M. Harris.....	"	14.28	9.48	4.8	"	"
48432	"	F. R. Hayden.....	"	14.02	9.02	5.0	"	"
48438	"	Geo. R. Lawrence..	"	12.84	9.24	3.6	"	"
48427	"	J. M. Coats.....	"	13.18	9.08	4.1	"	"
48428	"	G. O. Hale.....	"	13.17	8.97	4.2	"	"
48528	4-29-07	P. J. O'Connor.....	Hartford	13.90	8.90	5.0	"	"
48525	"	W. H. Coutermarsh	"	10.45	6.95	3.5	"	Dirty; water'd
485-2	5- 1-07	C. P. Beebe.....	Rutland	12.57	8.77	3.8	"	Dirty
48583	"	R. H. Fintell.....	"	13.54	8.94	4.6	"	"
48584	"	Temple Bros.....	"	12.18	8.58	3.6	"	"
48587	"	T. A. Quigley.....	"	12.09	8.69	3.4	"	"
48589	"	C. G. Marks.....	"	13.42	8.92	4.5	"	"
48590	"	"	"	9.25	6.75	2.5	"	Dirty; water'd
48591	"	L. Avery.....	"	13.18	8.88	4.3	"	Dirty
48596	"	A. K. Candlish.....	"	12.92	8.62	4.3	"	"
48598	"	A. Premo.....	"	12.45	8.75	3.7	"	"
48600	"	B. F. Heath.....	"	12.88	8.98	3.9	"	"
48629	"	G. Frisby.....	Shaftsbury	12.34	8.94	3.4	"	"
48630	"	B. R. Hulett.....	"	11.72	8.42	3.3	"	Dirty; low in total solids & solids not fat
48334	4-22-07	J. J. Squires.....	Manchester	11.28	7.88	4.4	"	Dirty; water'd

Total, 142 below standard

Digitized by Google

Liquors Examined for the Secretary of State During March, April, and up to May 10, 1907.

Lab. No.	Date rec'd.	Brand.	Manufacturing.	Dealer.	Result.
46898	2-6-07	Malt-Nutrine	Anheuser-Busch Brew. Asso. St. Louis	S. S. Pierce, Boston, Mass.	Alcohol, 1.65 vol. Preservative (salicylic acid).
46901	3-4-07	Gold Medal Tivoli	Springfield Breweries Co., Springfield, Mass.	Springfield Breweries Co., Springfield, Mass.	Not preserved. Passed.
46902	"	Gold Medal Wurzburger	"	"	" "
46903	"	Hampden Pale Ale	"	"	" "
46904	"	Highland Golden Ale	"	"	" "
46905	"	Hampden Stock Ale, I. P.	"	"	" "
46906	"	Highland Pilsener	"	"	" "
46907	"	Highland Malt Extract	"	"	" "
46908	"	Salvator Lager	"	"	" "
46909	"	Gen. Old Bock	"	"	" "
46910	"	Hampden Porter	"	"	" "
46911	"	Hampden Amber Ale	"	"	" "
46912	"	Highland Dark Ale	"	"	" "
46913	"	Highland Porter	"	"	" "
46914	"	Highland Bock	"	"	" "
46915	"	Present Use Ale	S. Bolton's Sons, Troy, N. Y.	S. Bolton's Sons	" "
46916	"	Stock Ale	"	"	" "
46917	"	Porter	"	"	" "
46918	"	Duffy's Pure Malt Whiskey		Conway Co., Boston	Does not conform to U. S. P. standard.* Residue high, sweet.
46919	"	Whiskey, Heritage		"	Does not conform. Decolorized by kaolin
46920	"	Whiskey, Irish		"	Conforms to U. S. P. standard.
46921	"	Whiskey, Bonheur		"	Conforms to U. S. P. standard.
46922	"	Rock and Rye		"	Passed. No standard.
46923	"	Whiskey, Old Pepper		"	Does not conform. Low in alcohol.
46924	"	Whiskey, Brookline		"	Does not conform. Decolorized (labeled colored).
46925	"	Whiskey, Red Fox		"	Does not conform. Decolorized (labeled colored).
46926	"	Whiskey, Atherton		"	Conforms.
46927	"	Scotch, House of Keys		"	Conforms.
46928	"	Whiskey, Ky. Taylor		"	Does not conform. Decolorized.
46929	"	Whiskey, G. O. Blake		"	Does not conform. Decol. Res. sweet.
46930	"	Whiskey, O. F. C.		"	Conforms.
46931	"	Whiskey, Hunter		"	Does not conform. Decolorized.
46932	"	Whiskey, Deep Spring		"	Does not conform. Residue high, sweet; alcohol low.
46933	"	Whiskey, Don Rex		"	Does not conform. Residue high, sweet.
46934	"	Rum, Everett Spring		"	Not adulterated.
46935	"	Holland Gin (Golden Hopher)		"	Not adulterated.

* United States Pharmacopœia Standard.

Digitized by Google

LIQUORS EXAMINED FOR THE SECRETARY OF STATE DURING MARCH, APRIL, AND UP TO MAY 10, 1907 (Continued).

Lab. No.	Date rec'd.	Brand.	Manufacturing.	Dealer.	Result.
46936	3-4-07	Cognac, Heritage XXX.....	.....	Conway Co , Boston.....	Does not conform. Residue high, sweet. Decolorized.
46937	"	Don Rex Martinio Cocktails.	.....	"	No standard.
46938	"	Don Rex Manhattan C'ktails	.....	"	No standard.
46939	"	California Port.....	.....	"	Not adulterated.
46940	"	Port, Heritage.....	.....	"	Not adulterated.
46941	"	Sherry, Duff-Gordon.....	.....	"	Not adulterated.
46942	"	Sherry, Heritage.....	.....	"	Not adulterated.
46943	"	Sherry, California.....	.....	"	Not adulterated.
46944	"	Champagne, State Seal.....	.....	"	Not adulterated.
47242	3-12-07	Ale No. 1.....	Fitzgerald Bros. Brew. Co., Troy, N. Y.	.....	Broken in transit.
47243	"	Lager No. 2.....	Fitzgerald Bros. Brew. Co., Troy, N. Y.	.....	No standard.
47244	"	Porter No. 3.....	Fitzgerald Bros. Brew. Co., Troy, N. Y.	.....	No standard.
47252	3-16-07	Harvard Ale, dark brilliant..	Lowell, Mass.	C. Berry & Co., Boston, Mass	No standard.
47253	"	Harvard ½ Stock Ale.....	" "	"	No standard.
47254	"	Harvard $1000 pure Beer.....	" "	"	No standard.
47255	"	Harvard Old Stock Porter...	" "	"	No standard.
47256	"	Harvard Fresh Porter.....	" "	"	No standard.
47257	"	Harvard Old Amber Ale....	" "	"	No standard.
47258	"	P. B. Ale.....	Van Nostrand, Boston, Mass	"	No standard.
47259	"	Sterling Ale.....	Rueter & Co., Boston, Mass.	"	No standard.
47260	"	Guinness Stout, Bulldog Br'd	Liverpool, Eng.	"	No standard.
47261	"	Bass Ale, Bulldog Brand.....	" "	"	Not adulterated.
47262	"	Whiskey, 102 proof.....	C. Berry & Co., Boston, Mass	"	Conforms.
47263	"	Old Monogram Rye Whiskey	.....	"	Does not conform. Decolorized by kaolin
47264	"	Berry's Diamond Wedding Whiskey.....	C. Berry & Co., Boston, Mass	"	Does not conform. Residue high, sweet. Decolorized.
47265	"	Kernwood Old Reserve Whiskey.....	.....	"	Does not conform. Residue high, sweet. Decolorized.
47266	"	Finch Golden Wedding Whiskey.....	.....	"	Conforms.
47267	"	Usher's Scotch Whiskey.....	.....	"	Does not conform. Residue high, sweet.
47268	"	Old Crow Whiskey.....	.....	"	Does not conform. Decolorized by kaolin
47269	"	Dunville's Irish Whiskey....	.....	"	Does not conform. Decolorized by kaolin Residue high, sweet.
47270	"	Old Jefferson Whiskey.....	.....	"	Does not conform. Decolorized by kaolin
47271	"	Monogram Whiskey.....	.....	"	Does not conform. Decolorized by kaolin
47272	"	Berry's Diamond Wedding Whiskey, special.....	.....	"	Does not conform. Decolorized by kaolin

Digitized by Google

Liquors Examined for the Secretary of State During March, April, and up to May 10, 1907 (Continued).

Lab. No.	Date rec'd.	Brand.	Manufacturing.	Dealer.	Result.
47273	3-16-07	G. W. Taylor Whiskey		C. Berry & Co., Boston, Mass	Does not conform. Decolorized by kaolin
47274	"	Berry's Malt Whiskey		"	Does not conform. Residue high, sweet.
47275	"	California Brandy		"	Does not conform. Residue high, sweet. Decolorized by kaolin.
47276	"	Henessey Brandy		"	Does not conform. Residue high, sweet. Decolorized by kaolin.
47277	"	Cherry Brandy		"	No standard. Passed.
47278	"	Blackberry Brandy		"	No standard. Passed.
47279	"	Martini Cocktail		"	No standard. Passed.
47280	"	Rock and Rye		"	No standard. Passed.
47281	"	Manhattan Cocktail		"	No standard. Passed.
47282	"	New England Rum		"	No standard. Passed.
47283	"	St. Croix Rum		"	No standard. Passed.
47284	"	Jamaica Rum		"	No standard. Passed.
47285	"	Medford Rum		"	No standard. Passed.
47286	"	Cherry Rum		"	No standard. Passed.
47287	"	California Claret		"	Not adulterated.
47288	"	Domestic Gin		"	Passed. No standard.
47289	"	Old Tom Gin		"	Passed. No standard. Solids high.
47290	"	Walden Dry Gin		"	Passed. No standard.
47291	"	Post Hoorn Gin		"	Passed. No standard.
47292	"	Holland Gin		"	Passed. No standard.
47293	"	O'Forrester & Co. Port		"	Not adulterated.
47294	"	Duff Gordon Sherry		"	Not adulterated.
47295	"	Angelica Wine		"	Not adulterated.
47296	"	California Port		"	Not adulterated.
47297	"	California Sherry		"	Not adulterated.
47298	"	Creme de Menthe		"	Colored with coal tar dye.
47299	"	No. 1 Porter		J. F. Lynch, St. Albans, Vt.	No preservatives.
47300	"	No. 2 India Pale Ale		"	No preservatives.
47301	"	No. 3 Livelly Ale		"	No preservatives.
47302	"	No. 4 Stout Porter		"	No preservatives.
47303	"	No. 5 Still Ale		"	No preservatives.
47304	"	No. 6 Homested Ale		"	No preservatives.
47305	"	No. 7 Lager		"	No preservatives.
47306	"	No. 8 Hayfield Whiskey		"	Conforms.
47307	"	No. 9 Old Cornelius Whiskey		"	Does not conform. Decolorized by kaolin High in solids, sweet.
47308	"	No. 10 Old J. B. T. Whiskey		"	Conforms.
47309	"	No. 11 Rye Malt Whiskey		"	Does not conform. Low in alcoh., sweet.
47310	"	No. 12 Silas Moore Whiskey		"	Does not conform. Decolorized by kaolin sweet; high in solids.

Digitized by Google

Liquors Examined for the Secretary of State During March, April, and up to May 10, 1907 (Continued).

Lab. No.	Date rec'd.	Brand.	Manufacturing.	Dealer.	Result.
47311	3-16-07	No. 13 Gin		J. F. Lynch, St. Albans, Vt.	No standard.
47655	3-27-07	Stock Ale		Fitzgerald Bros. Brew. Co., Troy, N. Y.	No preservatives.
47656	"	Present Use Ale		Fitzgerald Bros. Brew. Co., Troy, N. Y.	No preservatives.
47657	"	Dark Lager		Fitzgerald Bros. Brew. Co., Troy, N. Y.	No preservatives.
47761	3-30-07	Diamond Wedding Whiskey, special		C. Berry & Co., Boston, Mass	Conforms.
47762	"	Diamond Wedding Whiskey		"	Conforms.
47763	"	XXXX Monogram Whiskey		"	Conforms.
47764	"	Old Jefferson Whiskey		"	Conforms.
47765	"	Berry's Malt Whiskey		"	Conforms.
47766	"	G. W. Taylor Whiskey		"	Conforms.
47767	"	Old Crow Whiskey		"	Conforms.
47768	"	Kernwood Whiskey		"	Conforms.
47769	"	Hennesy Brandy		"	Conforms.
47770	"	California Brandy		"	Conforms.
47771	"	Irish Whiskey		"	Conforms.
47772	"	Scotch Whiskey		"	Conforms.
47910	4-5-07	Angler Rye Whiskey		Sample & Co., New York	Does not conform. High in solids; sweet. Decolorized by kaolin.
47911	"	Crystalline Whiskey		"	Does not conform. High in solids; sweet. Decolorized by kaolin.
47912	"	Philae Whiskey		"	Conforms.
47913	"	Shedlers Whiskey		"	Does not conform. High in solids; sweet. Decolorized by kaolin.
47914	"	Finch Rye Whiskey		"	Conforms.
47915	"	Waverly Rye Whiskey		"	Conforms.
47916	"	Solitaire S. M. Whiskey		"	Conforms.
47917	"	Ingraham's Scotch Whiskey		"	Conforms.
47918	"	Betheme Bourbon Whiskey		"	Conforms.
47919	"	Old Sutton Whiskey		"	Does not conform. High in solids; sweet. Decolorized by kaolin.
47920	"	Sunnyside Rye Whiskey		"	Does not conform. High in solids; sweet. Decolorized by kaolin.
47921	"	French Brandy		"	Does not conform. High in solids; sweet. Decolorized by kaolin.
47922	"	Sterling Brandy		"	Does not conform. Decolorized by kaolin
47923	"	California Brandy		"	Does not conform. Decolorized by kaolin
47924	"	Old Tom Gin		"	No standard.
47925	"	88 Starr Gin		"	No standard.

Digitized by Google

LIQUORS EXAMINED FOR THE SECRETARY OF STATE DURING MARCH, APRIL, AND UP TO MAY 10, 1907 (Continued).

Lab. No.	Date Rec'd.	Brand.	Manufacturing.	Dealer.	Result.
47926	4-5-07	Doric Gin		Sample & Co., New York	No standard.
47927	"	Sterling Gin		"	No standard.
47928	"	Dry Gin		"	No standard.
47929	"	California Port		"	No standard.
47930	"	Moncora Port Wine		"	No standard.
47931	"	Socia Port Wine		"	No standard.
47932	"	Ema Port Wine		"	No standard.
47933	"	New England Rum		"	No standard.
47934	"	Jamaica Rum		"	No standard.
47935	"	California Sherry		"	No standard.
47936	"	Duff-Gordon & Co. Sherry		"	No standard.
47937	"	Blackberry Cordial		"	No standard.
47938	"	Red Label 3-x Ale	Rueter & Co., Boston, Mass.	C. Berry & Co., Boston, Mass	No standard. No preservatives.
47939	"	Blue Label 3-x Ale	"	"	No standard. No preservatives.
47940	"	Roessh Premium Lager		"	No standard. No preservatives.
47941	"	Golden Wedding Whiskey		"	Conforms.
47942	"	Old Crow Whiskey		"	Conforms.
47943	"	Highland Scotch Whiskey		"	Conforms.
47944	"	Buchanan Whiskey		"	Conforms.
47945	"	French Cognac Brandy		"	Does not conform. High in solids and sweet.
47946	"	Castillion Cognac Brandy		"	Does not conform. High in solids; sweet. Decolorized by kaolin.
47947	"	Claret Wine		"	Conforms.
47948	"	Present Use Ale		Conway Bros., Troy, N. Y.	No preservatives. No standard.
47949	"	Stock Ale		"	No preservatives. No standard.
47950	"	Uncle Sam Ale		"	No preservatives. No standard.
47951	"	Porter		"	No preservatives. No standard.
48100	4-12-07	Clermont Rye Whis., No. 1	Grabfelder & Co.	F. M. Brown, Barre, Vt.	Does not conform. Decolorized by kaolin
48101	"	Barber Rye Whiskey, No. 2		"	Does not conform. Decolorized by kaolin
48102	"	Rose Valley Whiskey, No. 3	Grabfelder & Co.	"	Does not conform. Decolorized by kaolin
48103	"	Kentucky Bell Whis., No. 4	"	"	Does not conform. Decolorized by kaolin
48104	"	Cane Spring Whiskey, No. 5	"	"	Conforms.
48105	"	Woodford Co. Whis., No. 6	"	"	Conforms.
48106	"	Echo Spring Whiskey, No. 7	"	"	Does not conform. Decolorized by kaolin
48107	"	Richfield Whiskey, No. 8	"	"	Does not conform. Decolorized by kaolin
48108	"	Silver Brook Whiskey, No. 9	"	"	Does not conform. Decolorized by kaolin
48109	"	Mountain Spring Wh., No. 10	"	"	Does not conform. Decolorized by kaolin
48110	"	Rye Gin, No. 11		"	No standard. Passed.
48111	"	Gin, No. 12	Grabfelder & Co.	"	No standard. Passed.
48112	"	American Malt Whis., No. 13	"	"	Conforms.
48113	"	Rum, No. 14	"	"	No standard. Passed.

Digitized by Google

LIQUORS EXAMINED FOR THE SECRETARY OF STATE DURING MARCH, APRIL, AND UP TO MAY 10, 1907 (Continued).

Lab. No.	Date rec'd.	Brand.	Manufacturing.	Dealer.	Result.
48114	4-12-07	Grape Brandy, No. 15		F. M. Brown, Barre, Vt	Does not conform. Decolorized by kaolin
48115	"	Port Wine		"	Not adulterated.
48116	"	Sherry Wine		"	Not adulterated.
48117	"	Alcohol		"	Conforms.
48099	"	Duffy's Pure Malt Whiskey.	Duffy Malt Whiskey Co	Conway & Co., Boston, Mass	Conforms.
48118	"	Duffy's Pure Malt Whiskey.	"	Columbia Dist'g Co., Albany	Conforms.
48119	"	Dongan Club Blend Whiskey		"	Does not conform. Decolorized by kaolin
48120	"	Harlem Rye Blend Whiskey		"	Does not conform. Decolorized by kaolin
48121	"	Columbia Rye Blend Whis.		"	Does not conform. Decolorized by kaolin
48122	"	Beaver Whiskey Blend		"	Does not conform. Decolorized by kaolin
48123	"	Pocahontas Whiskey Blend.		"	Does not conform. Decolorized by kaolin
48124	"	Club Rye Blend		"	Does not conform. Decolorized by kaolin
48125	"	Columbia Brandy		"	Conforms.
48126	"	American Columbia Gin		"	Passed. No standard.
48127	"	N. Y. State Blackb'y Cordial		"	Passed. No standard.
48128	"	California Sherry		"	Not adulterated.
48129	"	California Port		"	Not adulterated.
48130	"	American Creme de Menthe Cordial		"	Colored with coal tar dye.
48570	5-1-07	Angler Rye Whiskey		Sample & Co., New York	Conforms.
48571	"	Crystal Glenn Rye Whiskey.		"	Conforms.
48572	"	Sunnyside Rye Whiskey		"	Conforms.
48573	"	Old Sutton Rye Whiskey		"	Conforms.
48574	"	Shedder's Rye Whiskey		"	Conforms.
48575	"	No. 1 Rye Whiskey		"	Conforms.
48576	"	No. 1 Bourbon Whiskey		"	Conforms.
48577	"	California Brandy		"	Conforms.
48578	"	French Brandy		"	Does not conform. Solids, high; sweet taste.
48579	"	Sterling Brandy		"	Does not conform. Solids, high; sweet taste.
48615	5-2-07	Rose Valley Whiskey	Grabfelder & Co., Louisville, Ky	F. A. Brown, Barre, Vt	Conforms.
48616	"	Horseshoe Whiskey	Grabfelder & Co., Louisville, Ky	"	Conforms.
48617	"	Mountain Spring Whiskey.	Grabfelder & Co, Louisville. Ky	"	Conforms.
48618	"	Silver Brook Whiskey	Grabfelder & Co, Louisville, Ky	"	Conforms.
48619	"	Kentucky Belle Whiskey	Grabfelder & Co., Louisville, Ky	"	Conforms.

Digitized by Google

LIQUORS EXAMINED FOR THE LICENSE COMMISSIONERS DURING FEBRUARY, MARCH AND APRIL, 1907

Lab. No.	Date	Town	Brand	M'f'g.	Remarks
46706	1907 2-22	St. Albans.	Whiskey		Decolorized by kaolin. Sweet residue.
47656		Rutland.	Beer, No. 1		Passed. No preservatives.
47659		"	" No. 2		Passed. No preservatives.
47660		"	" No. 3		Passed. No preservatives.
47661		"	" No. 4		Passed. No preservatives.
47662		"	" No. 5		Passed. No preservatives.
47663		"	" No. 6		Passed. No preservatives.
47664		"	" No. 7		Passed. No preservatives.
47665		"	" No. 8		Passed. No preservatives.
47666		"	" No. 9		Passed. No preservatives.
47667		"	" No. 10		Passed. No preservatives.
47668		"	" No. 11	Pabst	Passed. No preservatives.
47669		"	Beer, No. 1 (plain)		Passed. No preservatives.
47670		"	Whiskey, No. 1		Does not conform.* Decolor. by kaolin
47671		"	" No. 2		Does not conform. Decolor. by kaolin
47672		"	" No. 3		Does not conform. Decolor. by kaolin
47673		"	" No. 4		Does not conform. Decolor. by kaolin
47674		"	" No. 5		Does not conform. Decolor. by kaolin
47675		"	" No. 6		Does not conform. Decolor. by kaolin
47676		"	" No. 7		Does not conform. Decolor. by kaolin
47677		"	" No. 8		Does not conform. Decolor. by kaolin
47678		"	" No. 9		Does not conform. Decolor. by kaolin
47679		"	" No. 10		Does not conform. Decolor. by kaolin

* United States Pharmacopœia Standard.

SUMMARY OF LIQUORS

Liquors	Conforms to U. S. P. s't'd.	Does not conform	No U. S. P. standard. Passed	No U. S. P. standard. Rejected	Total
Whiskey	46	54			100
Brandy	4	11			15
Rum			9		9
Wines	1		22		23
Gin			15		15
Miscellaneous cocktails, etc.			9	2	11
Malt Liquors			58	1	59
Alcohol	1				1
Total	52	65	113	3	233

Digitized by Google

MEDICO-LEGAL CASES

Specimens Examined by Order of Supreme Court Judge, for use in Court, from December 1, 1906, to May 10, 1907

TOWNS	MATERIAL	EXAMINED FOR	RESULTS	ORDERED BY	STATE'S ATTORN'Y
BENNINGTON CO.					
Pownal	Autopsy T. McGuire	Cause of death	Positive	C. C. Fitts	Daly
North Bennington	Autopsy, E. Mahon	" "	"	"	Meagher
CALEDONIA CO.					
St. Johnsbury	Beer	Alcoholic percentage	4.75	J. Powers	G. W. Hill
"	"	" "	4.60	"	"
"	"	" "	4.65	"	"
"	"	" "	5.25	"	"
"	"	" "	.75	"	"
"	"	" "	.73	"	"
"	"	" "	4.43	"	"
"	"	" "	4.80	"	"
"	"	" "	3.85	"	"
"	"	" "	5.00	"	"
"	"	" "	4.57	"	"
"	"	" "	4.94	"	"
"	"	" "	4.95	"	"
"	"	" "	4.98	"	"
"	"	" "	4.98	"	"
"	"	" "	5.09	"	"
"	"	" "	4.80	"	"
"	"	" "	4.73	"	"
"	"	" "	4.85	"	"
"	"	" "	5.15	"	"
"	"	" "	.66	"	"
"	"	" "	.74	"	"
"	"	" "	4.40	"	"
"	"	" "	4.15	"	"
"	"	" "	5.05	"	"
"	"	" "	4.95	"	"
"	"	" "	4.95	"	"
"	"	" "	5.08	"	"
"	"	" "	4.90	"	"
"	"	" "	4.75	"	"
"	"	" "	4.98	"	"
"	"	" "	4.93	"	"
"	"	" "	5.05	"	"
"	"	" "	4.91	"	"
"	"	" "	5.07	"	"
"	"	" "	4.90	"	"
"	Clothing	Blood stains	Positive	Haselton	"
"	Tissue	Pathological lesions	"	"	"
"	Beer	Alcoholic percentage	.89	Powers	"
"	"	" "	1.01	"	"
"	"	" "	.73	"	"
"	"	" "	.65	"	"
"	"	" "	.69	"	"
"	"	" "	.73	"	"
"	"	" "	.68	"	"
"	"	" "	.67	"	"
"	"	" "	.90	"	"
"	"	" "	.88	"	"
"	"	" "	5.25	"	"
"	"	" "	5.25	"	"
"	"	" "	5.19	"	"
"	"	" "	5.22	"	"
"	"	" "	5.25	"	"
"	"	" "	5.27	"	"
"	"	" "	5.05	"	"

Digitized by Google

MEDICO-LEGAL CASES (Continued)

Specimens Examined by Order of Supreme Court Judge, for use in Court, from December 1, 1906, to May 10, 1907

TOWNS	MATERIAL	EXAMINED FOR	RESULTS	ORDERED BY	STATE'S ATTORN'Y
St. Johnsbury	Beer	Alcoholic percentage	4.76	Powers	Hill
"	"	" "	4.85	"	"
"	"	" "	5.12	"	"
CHITTENDEN CO.					
Burlington	"	" "	6.	Haselton	Sherman
Essex Junction	Autopsy, Jno. Early	Cause of death	Positive	"	"
GRAND ISLE CO.					
South Hero	Autopsy, Jacob Weinheimer	" "	"	Fitts	
ORANGE CO.					
Post Mills	Beer	Alcoholic percentage	4.57	"	Wilson
Randolph Centre	Autopsy, Ellen Tobie	Cause of death	Positive	"	"
Randolph	Tissues	Morphine	Negative	"	"
"	Fluid	"	Positive	"	"
"	Liquor	Alcoholic percentage	.85	"	"
ORLEANS CO.					
Newport Center	Autopsy, Louise Niles	Cause of death	Positive	"	
Newport	Beer	Alcoholic percentage	.80	Powers	Cook
RUTLAND CO.					
Wallingford	Fluid	Poison	Negative	Waterman	Laurence
WASHINGTON CO.					
Fayston	Autopsy, Henry Tracy	Cause of death	Positive	Fitts	
WINDHAM CO.					
Bellows Falls	Autopsy, Iva Martin	Cause of death	"	"	Ryder
WINDSOR CO.					
White River Jct.	Beer	Alcoholic percentage		No order	
" "	"	" "		"	
Woodstock	"	" "	4.64	Fitts	Buck
"	"	" "	4.40	"	"

Total number, 77

Digitized by Google

CULTURES EXAMINED FOR DIPHTHERIA DURING FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907

TOWNS	NO. OF CASES			NO. OF CULTURES EXAMINED						No. of cases released by negative cultures	Average days duration of time in which germs persisted
	Positive	Negative	Total	Positive	Negative	Suspicious	For Diag.	For Release	Total		
ADDISON CO.											
Bristol	.....	2	2	.....	2	.....	2	.....	2	.....	.....
Ferrisburgh	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Lincoln	1	2	3	1	3	.....	3	1	4	1	7
Starksboro	.....	1	1	.....	2	.....	2	.....	2	.....	.....
Shoreham	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Vergennes	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Total	1	8	9	1	10	.....	10	1	11	1	7
BENNINGTON CO.											
Bennington	.....	2	2	.....	2	.....	2	.....	2	.....	.....
Manchester Center	.....	2	.....	.....	2	.....	2	.....	2	.....	.....
Total	.....	4	4	.....	4	.....	4	.....	4	.....	.....
CALEDONIA CO.											
Danville	1	2	3	2	3	.....	3	2	5	1	11
Groton	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Hardwick	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Peacham	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Ryegate	.....	2	2	.....	2	.....	2	.....	2	.....	.....
St. Johnsbury	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Total	1	8	9	2	9	.....	9	2	11	1	11
CHITTENDEN CO.											
Burlington	42	76	118	89	128	.....	127	90	217	38	11
Burlington So	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Charlotte	.....	3	3	.....	3	.....	3	.....	3	.....	.....
Colchester	2	6	8	8	9	.....	8	9	17	2	13
Essex	.....	3	3	.....	3	.....	3	.....	3	.....	.....
Essex Jct	.....	3	3	.....	3	.....	3	.....	3	.....	.....
Hinesburg	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Westford	.....	3	3	.....	3	.....	3	.....	3	.....	.....
Williston	.....	2	2	.....	2	.....	2	.....	2	.....	.....
Winooski	1	6	7	1	7	.....	7	1	8	1	6
Total	45	104	149	98	160	.....	158	100	258	41	10
ESSEX CO.											
Canaan	3	11	14	7	19	.....	17	9	26	3	16
Island Pond	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Total	3	12	15	7	20	.....	18	9	27	3	16
FRANKLIN COUNTY.											
Montgomery	.....	2	2	.....	2	.....	2	.....	2	.....	.....
Sheldon	1	.....	1	1	1	.....	1	1	2	1	6
Total	1	2	3	1	3	.....	3	1	4	1	6
ORANGE COUNTY.											
Randolph	7	15	22	13	24	.....	23	14	37	7	17
Tunbridge	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Total	7	16	23	13	25	.....	24	14	38	7	17

Digitized by Google

CULTURES EXAMINED FOR DIPHTHERIA DURING FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907 (Continued)

TOWNS	NO. OF CASES			NO. OF CULTURES EXAMINED						No. of cases released by negative cultures	Average days duration of time in which germs persisted
	Positive	Negative	Total	Positive	Negative	Suspicious	For Diag.	For Release	Total		
ORLEANS COUNTY.											
Derby	.....	2	2	.....	2	.....	2	.....	2	.....	.....
Total	.....	2	2	.....	2	.....	2	.....	2	.....	.....
RUTLAND COUNTY.											
Brandon	.....	2	2	.....	2	.....	2	.....	2	.....	.....
Fair Haven	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Rutland	1	7	8	1	7	.....	7	1	8	1	6
Proctor	.....	2	2	.....	4	.....	3	1	4	1	19
Poultney	.....	2	2	.....	2	.....	2	.....	2	.....	.....
Wallingford	.....	1	1	.....	1	.....	1	.....	1	.....	.....
Total	1	12	13	1	14	.....	13	2	15	2	13
WASHINGTON CO.											
Barre	.....	3	3	.....	3	.....	3	.....	3	.....	.....
Montpelier	1	2	3	1	3	.....	3	1	4	1	6
Waterbury	.....	6	6	.....	6	.....	6	.....	6	.....	.....
Total	1	11	12	1	12	.....	9	4	13	1	6
WINDHAM COUNTY.											
Bellows Falls	.....	7	7	.....	7	.....	7	.....	7	.....	.....
Brattleboro	3	4	7	3	9	.....	7	5	12	3	12
Wilmington	.....	1	1	.....	2	.....	2	.....	2	.....	.....
Total	3	12	15	3	18	.....	16	5	21	3	12
WINDSOR COUNTY.											
Hartland	.....	.....	.....	6	.....	.....	2	4	6	1	37
Ludlow	1	.....	1	1	1	.....	1	1	2	1	13
Norwich	.....	2	2	.....	3	.....	3	.....	3	.....	.....
Springfield	.....	2	2	.....	4	.....	4	.....	4	.....	.....
Woodstock	.....	4	4	.....	4	.....	4	.....	4	.....	.....
Total	1	8	9	7	12	.....	14	5	19	2	25
Grand Total	64	199	263	134	289	.....	280	143	423	62	12+

Digitized by Google

SPECIMENS OF SPUTUM EXAMINED FOR TUBERCULOSIS DURING FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907

TOWNS	NO. OF CASES							NO. OF SPECIMENS						
	Male		Female		Sex Not Stated		Total	Male		Female		Sex Not Stated		Total
	Positive	Negative	Positive	Negative	Positive	Negative		Positive	Negative	Positive	Negative	Positive	Negative	
ADDISON COUNTY.														
Addison	2	....	....	....	....	....	2	2	....	....	....	....	....	2
Bristol	....	1	....	2	....	....	3	....	1	....	2	....	....	3
Granville	....	2	....	....	....	....	2	....	2	....	....	....	....	2
Lincoln	....	2	....	....	....	....	2	....	2	....	....	....	....	2
Middlebury	....	1	....	....	....	....	1	....	1	....	....	....	....	1
New Haven	1	2	....	1	....	....	4	1	2	....	1	....	....	4
Orwell	....	1	....	....	1	....	2	....	1	....	....	1	....	2
Starksboro	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Shoreham	....	....	1	....	....	....	1	....	....	1	....	....	....	1
Vergennes	....	2	....	2	....	....	4	....	3	....	3	....	....	6
Total	4	11	1	5	1	....	22	4	12	1	6	1	....	24
BENNINGTON COUNTY.														
Bennington	1	4	....	1	....	....	6	1	4	....	1	....	....	6
North Bennington	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Dorset	2	....	....	1	....	....	3	2	....	....	1	....	....	3
South Shaftsbury	....	1	....	....	1	....	2	....	1	....	....	1	....	2
Total	3	6	....	2	1	....	12	3	6	....	2	1	....	12
CALEDONIA COUNTY.														
Barnet	....	1	....	....	....	....	1	....	1	....	....	....	....	1
West Burke	1	1	....	....	....	....	2	1	1	....	....	....	....	2
Danville	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Groton	....	2	....	....	....	....	2	....	3	....	....	....	....	3
Hardwick	1	3	1	4	....	....	9	1	3	2	4	....	....	10
Lyndonville	....	....	1	....	....	....	1	....	....	1	....	....	....	1
McIndoes Falls	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Passumpsic	....	....	1	....	....	....	1	....	....	1	....	....	....	1
Sheffield	....	....	....	1	....	....	1	....	....	....	1	....	....	1
St. Johnsbury	....	6	1	8	....	....	15	....	6	1	8	....	....	15
Sutton	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Total	2	15	4	14	....	....	35	2	16	5	14	....	....	37
CHITTENDEN COUNTY.														
Bolton	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Burlington	2	10	3	22	....	2	39	2	18	3	24	....	2	49
Burlington South	2	....	....	....	....	....	2	2	....	....	....	....	....	2
Colchester	2	....	....	....	....	....	2	2	....	....	....	....	....	2
Essex Junction	1	....	....	1	....	....	2	1	....	....	1	....	....	2
Hinesburg	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Huntington	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Milton	....	....	....	2	....	....	2	....	....	....	2	....	....	2
Richmond	....	2	....	....	....	....	2	....	2	....	....	....	....	2
Westford	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Williston	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Winooski	3	1	....	6	....	....	10	4	1	....	7	....	....	12
Total	10	15	3	34	....	2	64	11	23	3	37	....	2	76
ESSEX COUNTY.														
Victory	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Total	....	1	....	....	....	....	1	....	1	....	....	....	....	1

Digitized by Google

SPECIMENS OF SPUTUM EXAMINED FOR TUBERCULOSIS DURING FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907 (Continued)

TOWNS	NO. OF CASES							NO. OF SPECIMENS						
	Male		Female		Sex Not Stated		Total	Male		Female		Sex Not Stated		Total
	Positive	Negative	Positive	Negative	Positive	Negative		Positive	Negative	Positive	Negative	Positive	Negative	
FRANKLIN COUNTY.														
Bakersfield	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Berkshire	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Enosburgh Falls	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Fairfax	....	2	....	1	....	....	3	....	2	....	1	....	....	3
Fairfield	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Fletcher	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Georgia	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Highgate	....	....	1	....	....	....	1	....	....	1	....	....	....	1
Montgomery	....	....	1	....	....	1	2	....	....	1	....	....	1	2
Montgomery Center	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Richford	1	....	....	1	....	....	2	1	....	....	1	....	....	2
St. Albans	....	1	....	1	....	....	2	....	1	....	1	....	....	2
Sheldon	1	....	....	2	....	....	3	1	....	....	2	....	....	3
St. Albans	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Swanton	....	1	3	....	....	....	4	....	1	3	....	....	....	4
Total	5	4	5	10	....	1	25	5	4	5	10	....	1	25
GRAND ISLE COUNTY.														
Alburg	1	....	....	3	....	....	4	2	....	....	3	....	....	5
Grand Isle	....	1	....	1	....	....	2	....	1	....	1	....	....	2
North Hero	....	....	....	1	....	....	1	....	....	....	1	....	....	1
South Hero	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Total	1	2	....	5	....	....	8	2	2	....	5	....	....	9
LAMOILLE COUNTY.														
Belvidere	....	....	....	....	....	....	....	....	1	....	....	....	....	1
Eden Mills	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Hyde Park	....	....	....	1	....	....	1	....	....	1	1	....	....	2
Johnson	....	....	2	1	....	....	3	....	....	2	1	....	....	3
Stowe	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Waterville	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Wolcott	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Total	1	2	2	3	....	....	8	1	3	3	3	....	....	10
ORANGE COUNTY.														
Randolph	1	1	....	3	....	....	5	1	2	....	3	....	....	6
Tunbridge	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Wells River	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Williamstown	1	1	1	....	....	....	3	1	1	1	....	....	....	3
Total	2	3	1	4	....	....	10	2	4	1	4	....	....	11
ORLEANS COUNTY.														
Barton	....	1	1	....	....	....	2	....	1	1	....	....	....	2
Charleston	....	....	....	....	....	1	1	....	....	....	....	....	1	1
Craftsbury	....	....	....	2	....	....	2	....	....	....	2	....	....	2
Irasburg	1	1	....	1	....	....	3	1	1	....	1	....	....	3
Newport	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Total	1	3	1	3	....	1	9	1	3	1	3	....	1	9

Digitized by Google

SPECIMENS OF SPUTUM EXAMINED FOR TUBERCULOSIS DURING FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907 (Continued)

TOWNS	NO. OF CASES							NO. OF SPECIMENS						
	Male		Female		Sex Not Stated		Total	Male		Female		Sex Not Stated		Total
	Positive	Negative	Positive	Negative	Positive	Negative		Positive	Negative	Positive	Negative	Positive	Negative	
RUTLAND COUNTY.														
Brandon	1	2	1	1	....	....	5	1	2	1	1	....	....	5
Castleton	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Clarendon	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Fair Haven	....	1	1	1	....	....	3	....	1	2	1	....	....	4
Pittsford	2	....	1	....	....	....	3	2	....	1	....	....	....	3
Pawlet	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Rutland	2	11	....	7	....	2	22	2	13	....	7	....	2	24
Proctor	2	4	....	4	....	....	10	2	4	....	4	....	....	10
Poultney	....	2	....	1	....	....	3	....	2	....	1	....	....	3
Rutland West	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Sudbury	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Wallingford	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Total	7	23	3	17	....	2	52	7	25	4	17	....	2	55
WASHINGTON COUNTY.														
Barre	7	8	....	....	....	....	15	8	10	....	....	....	....	18
Calais	....	1	1	....	....	....	2	....	1	1	....	....	....	2
Graniteville	....	....	....	2	....	....	2	....	....	....	2	....	....	2
Middlesex	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Montpelier	2	3	....	3	....	....	8	2	3	....	3	....	....	8
Moretown	....	....	1	....	....	....	1	....	....	1	....	....	....	1
Northfield	....	3	2	1	....	....	6	....	3	2	1	....	....	6
Plainfield	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Waitsfield	1	....	....	....	..	....	1	1	....	....	....	....	....	1
Waterbury	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Total	10	16	4	8	....	....	38	11	18	4	8	....	....	41
WINDHAM COUNTY.														
Bellows Falls	....	1	....	3	....	....	4	....	1	....	3	....	....	4
Brattleboro	1	7	2	5	....	....	15	1	7	2	6	....	....	16
Dummerston	....	....	1	1	....	....	2	....	....	1	1	....	....	2
Londonderry	....	....	....	....	....	1	1	....	....	....	....	....	1	1
Newfane	....	1	....	1	....	....	2	....	1	....	1	....	....	2
Putney	....	2	....	1	....	....	3	....	2	....	1	....	....	3
Rockingham	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Saxtons River	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Townshend	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Westminster	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Whitingham	....	....	1	....	....	....	1	....	....	1	....	....	....	1
Wilmington	1	1	....	2	....	....	4	1	1	....	2	....	....	4
Total	3	14	4	14	....	1	36	3	14	4	15	....	1	37
WINDSOR COUNTY.														
Chester	....	....	1	....	....	....	1	....	....	1	....	....	....	1
Felchville	....	....	....	....	....	1	1	....	....	....	....	....	1	1
Gaysville	....	1	....	....	....	....	1	....	1	....	....	....	....	1
Hartland	1	....	....	....	....	....	1	1	....	....	....	....	....	1
Ludlow	....	....	....	1	....	....	1	....	....	....	1	....	....	1
Proctorsville	....	2	....	....	....	....	2	....	2	....	....	....	....	2

Digitized by Google

SPECIMENS OF SPUTUM EXAMINED FOR TUBERCULOSIS DURING FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907 (Continued)

TOWNS	NO. OF CASES							NO. OF SPECIMENS						
	Male		Female		Sex Not Stated		Total	Male		Female		Sex Not Stated		Total
	Positive	Negative	Positive	Negative	Positive	Negative		Positive	Negative	Positive	Negative	Positive	Negative	
Quechee	....	....	....	2	....	....	2	....	....	....	2	....	....	2
South Royalton	....	....	1	....	....	1	2	....	....	1	....	....	1	2
Springfield	...	2	1	2	....	....	5	....	2	1	2	....	....	5
Sharon	....	....	1	....	....	....	1	....	....	1	....	....	....	1
White River Junction	2	....	....	....	....	....	2	2	....	....	....	....	....	2
Windsor	....	....	....	2	....	....	2	....	....	....	2	....	....	2
Woodstock	....	3	....	1	....	....	4	....	3	....	1	....	....	4
Total	3	8	4	8	....	2	25	3	8	4	8	....	2	25
Grand Total	52	123	32	127	2	9	345	55	139	35	132	2	9	372

SPECIMENS OF BLOOD EXAMINED FOR MALARIAL FEVER DURING DECEMBER, 1906, JANUARY, FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907

TOWNS	Positive	Negative	Total	Positive	Negative	Total
ADDISON COUNTY						
Vergennes	.....	1	1	.....	1	1
CALEDONIA CO.						
Hardwick	.....	1	1	.....	1	1
CHITTENDEN CO.						
Burlington	.....	1	1	.....	1	1
GRAND ISLE CO.						
South Hero	.....	1	1	.....	2	2
RUTLAND CO.						
Pittsford	.....	2	2	.....	2	2
Rutland	.....	5	5	.....	5	5
Proctor	.....	1	1	.....	1	1
Grand Total	.....	12	12	.....	13	13

Digitized by Google

SPECIMENS OF BLOOD EXAMINED FOR TYPHOID FEVER DURING FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907

TOWNS	No. of Cases			No. of Specimens			TOWNS	No. of Cases			No. of Specimens		
	Positive	Negative	Total	Positive	Negative	Total		Positive	Negative	Total	Positive	Negative	Total
ADDISON CO.							ORANGE CO.						
Middlebury	1	....	1	1	....	1	Randolph	....	1	1	....	1	1
New Haven	....	1	1	....	1	1	Total	....	1	1	....	1	1
Vergennes	2	2	4	2	2	4	ORLEANS CO.						
Total	3	3	6	3	3	6	Barton Landing	....	1	1	....	1	1
CALEDONIA CO.							Glover	2	....	2	2	....	2
West Barnet	1	....	1	1	....	1	Irasburg	....	1	1	....	1	1
West Burke	1	2	3	1	2	3	Newport	....	1	1	....	1	1
Hardwick	1	1	2	1	1	2	Total	2	3	5	2	3	5
McIndoes Falls	....	1	1	....	1	1	RUTLAND CO.						
St. Johnsbury	....	7	7	....	7	7	Brandon	1	1	2	1	1	2
Total	3	11	14	3	11	14	Clarendon	1	....	1	1	....	1
CHITTENDEN CO.							Fair Haven	....	3	3	....	3	3
Burlington	5	23	28	6	27	33	Mendon	....	1	1	....	1	1
Burlington So.	....	1	1	....	3	3	Rutland	3	9	12	3	10	13
Essex Junction	....	1	1	....	2	2	Wallingford	1	2	3	1	2	3
Jericho	....	1	1	....	1	1	Total	6	16	22	6	17	23
Westford	....	1	1	....	1	1	WASHINGTON CO.						
Winooski	....	3	3	....	3	3	Barre	....	1	1	....	1	1
Total	5	30	35	6	37	43	Montpelier	....	1	1	....	1	1
ESSEX CO.							Moretown	....	1	1	....	1	1
Island Pond	....	1	1	....	1	1	Total	....	3	3	....	3	3
Total	....	1	1	....	1	1	WINDHAM CO.						
FRANKLIN CO.							Brattleboro	....	3	3	....	3	3
Richford	....	1	1	....	1	1	Total	....	3	3	....	3	3
Total	....	1	1	....	1	1	WINDSOR CO.						
GRAND ISLE CO.							Bethel	1	....	1	1	....	1
South Hero	....	1	1	....	1	1	Gaysville	....	1	1	....	1	1
Total	....	1	1	....	1	1	South Royalton	....	1	1	....	1	1
LAMOILLE CO.							Total	1	2	3	1	2	3
Morrisville	....	1	1	....	1	1	Grand Total	20	79	99	21	87	108
Stowe	....	2	2	....	2	2							
Wolcott	....	1	1	....	1	1							
Total	....	4	4	....	4	4							

Digitized by Google

MISCELLANEOUS MICROSCOPICAL EXAMINATIONS MADE AT LABORATORY OF HYGIENE DURING FEBRUARY, MARCH, APRIL, AND TO MAY 10, 1907

TOWNS	DESCRIPTION OF MATERIAL	EXAMINED FOR	RESULTS			Total
			Pos.	Neg.	Unclassified	
ADDISON CO.						
New Haven	Powder	Composition	1	..	Copper & carbonate lime	1
Vergennes	Pus	Gonococci	..	1		1
BENNINGT'N CO.						
Bennington	Culture	Varioloid	..	1		1
Manchester	Tissue from cow	Tuberculosis	..	1		1
CALEDONIA CO.						
South Ryegate	Pus from chest	Infecting organism	1	..	Pneumococci	1
St. Johnsbury	Pus	Infecting organism	2		Staphlococci	2
	Urine	Tubercle bacilli		2	Diplococci	2
Groton	Pus	Gonococci	1	..		1
CHITTEND'N CO.						
Burlington	Fluid from cyst	Tubercle bacilli	..	2		2
"	Fluid from pleural cavity	Tubercle bacilli	..	1		1
"	Urine	Tubercle bacilli	..	3		3
"	Pus from eye	Infecting organism	3		1 Staphlococci 2 Diphtheria bacilli	3
"	Pus	Gonococci	6	12		18
"	Pus	Infecting organism	..	1		1
"	Urine	Gonococci	..	3		3
"	Cultures	Infecting organism	2	1	2 Staphlococci	3
"	Culture from wound	Infecting organism	1	..	Staph. pyog. aureus	1
"	Culture	Infecting organism	1	..	Streptococcus erysipelatus	1
"	Culture from boil	Infecting organism	1	..	Streptococci	1
"	Urine	Infecting organism	1	..	Staphlococcus	1
"	Pus from empyema	Infecting organism	1	..	Streptococci	1
"	Smear	Spirochæta Pallida	..	1		1
"	Pleuretic fluid	Infecting organism	1	..	Streptococci	1
"	Water from filter	Efficiency	30	7		37
Essex	Urine	Tubercle bacilli	..	1		1
"	Pork	Trichinosis	..	1		1
"	Pus from neck	Infecting organism	1	..	Diplococci	1
Winooski	Fæces	Tubercle bacilli	..	1		1
FRANKLIN CO.						
Richford	Pus	Gonococci	..	1		1
"	Urine	Gonococci	..	1		1
LAMOILLE CO.						
Johnson	Pus	Gonococci	..	1		1
GRAND ISLE CO.						
Grand Isle	Secretion from neck	Infecting organism	..	1	Sterile	1
RUTLAND CO.						
Rutland	Pus	Gonococci	..	1		1

Digitized by Google

MISCELLANEOUS MICROSCOPICAL EXAMINATIONS MADE AT LABORATORY OF HYGIENE DURING FEBRUARY, MARCH, APRIL, AND TO MAY 10, 1907 (Continued)

TOWNS	DESCRIPTION OF MATERIAL	EXAMINED FOR	RESULTS			Total
			Pos.	Neg.	Unclassified	
Rutland	Urine	Gonococci	..	1	.....	1
"	Urine	Tubercle bacilli	..	1	.....	1
WASHINGT'N CO.						
Barre	Pus	Spirochæta Pallida	..	1	.....	1
Roxbury	Pork	Disease	..	1	.....	1
WINDHAM CO.						
Brattleboro	Urine	Tubercle bacilli	..	2	.....	2
"	Pus from lung	Tubercle bacilli	1	2	.....	3
Williamsville	Pus from abcess	Tubercle bacilli	..	1	.....	1
WINDSOR CO.						
Bethel	Pus	Gonococci	1	2	.....	3
"	Blood	Tubercle bacilli	..	1	.....	1
Gaysville	Fæces	Tubercle bacilli	..	1	.....	1
Total	.....	.....	55	57	.....	112

EXAMINATIONS OF BURLINGTON WATER FOR BACILLUS COLI

1906			
December...	20 samples	8 positive	12 negative
1907			
January.....	15 "	9 "	6 "
February...	9 "	2 "	7 "
March.....	17 "	3 "	14 "
April.....	15 "	4 "	11 "
To May 10...	2 "		2 "
	78 samples	26 positive	52 negative

Digitized by Google

SPECIMENS OF WATER EXAMINED DURING FEBRUARY, MARCH, APRIL, AND UP TO MAY 10, 1907

TOWNS	GROUND WATERS					SURFACE WATERS			Total
	Normal	Polluted			Total	Normal	Polluted	Total	
		Present	Past	Past and Present					
ADDISON COUNTY.									
New Haven	.....	.....	.....	1	1	.....	.....	.....	1
Vergennes	.....	.....	.....	3	3	.....	.....	.....	3
Total	.....	.....	.....	4	4	.....	.....	.....	4
BENNINGTON COUNTY.									
North Bennington	.....	2	8	3	13	.....	.....	.....	13
Total	.....	2	8	3	13	.....	.....	.....	13
CHITTENDEN COUNTY.									
Burlington	.....	1	.....	.....	1	.....	2	2	3
Essex	1	.....	.....	1	2	.....	.....	.....	2
Total	1	1	.....	1	3	.....	2	2	5
FRANKLIN COUNTY.									
Franklin	.....	.....	.....	1	1	.....	.....	.....	1
Richford	.....	.....	.....	.....	.....	1	.....	1	1
Swanton	.....	.....	.....	.....	.....	1	.....	1	1
Total	.....	.....	.....	1	1	2	.....	2	3
LAMOILLE COUNTY.									
Stowe	.....	.....	1	.....	1	.....	.....	.....	1
Total	.....	.....	1	.....	1	.....	.....	.....	1
ORANGE COUNTY.									
Bradford	1	.....	.....	.....	1	.....	.....	.....	1
Randolph	.....	.....	1	.....	1	.....	.....	.....	1
Total	1	.....	1	.....	2	.....	.....	.....	2
ORLEANS COUNTY.									
Derby	.....	.....	.....	.....	.....	.....	1	1	1
Newport	.....	.....	.....	.....	.....	.....	2	2	2
Total	.....	.....	.....	.....	.....	.....	3	3	3
RUTLAND COUNTY.									
Cuttingsville	1	.....	.....	1	2	1	.....	1	3
Fair Haven	.....	1	.....	1	2	.....	.....	.....	2
Rutland	.....	.....	.....	1	1	1	1	2	3
Total	1	1	.....	3	5	2	1	3	8
WINDHAM COUNTY.									
Brattleboro	.....	.....	.....	.....	.....	.....	2	2	2
Wilmington	.....	.....	.....	.....	.....	1	.....	1	1
Total	.....	.....	.....	.....	.....	1	2	3	3
WINDSOR COUNTY.									
Rochester	1	.....	.....	.....	1	.....	.....	.....	1
Woodstock	.....	.....	.....	1	1	.....	.....	.....	1
Total	1	.....	.....	1	2	.....	.....	.....	2
Grand Total	4	4	10	18	31	5	8	13	44

Digitized by Google

CASES OF COMMUNICABLE DISEASES REPORTED TO THE SECRETARY OF THE STATE BOARD OF HEALTH FROM FEBRUARY 21 TO MAY 10, INCLUSIVE

COUNTY	Smallpox	Measles	Whooping Cough	Scarletina	Diphtheria and Croup	Typhoid Fever	Erysipelas	Chicken Pox	Mumps	Pneumonia	German Measles	Follicular Tonsilitis	Meningitis
Addison	8	33	5	7	8	6	2	....	2	5	....	....	....
Bennington	....	....	37	1	4	1	4	1	....	2	6	1	....
Caledonia	....	....	22	8	10	14	2	19	34	....	42	....	....
Chittenden	....	4	26	13	40	6	4	10	9	....	....	....	....
Essex	....	....	....	....	4	1	1	....	....	1	9	....	....
Franklin	....	26	7	....	2	1	....	1	18	....	118	....	....
Grand Isle	....	3	2	....	....	....	....	....	....	....	....	....	....
Lamoille	....	1	....	....	1	....	....	....	8	....	....	....	....
Orange	....	....	9	2	14	....	1	19	5	....	36	....	....
Orleans	....	2	34	5	2	1	....	....	4	....	....	....	....
Rutland	....	1	75	16	10	5	....	55	2	....	....	....	....
Washington	32	1	6	3	1	....	1	....	1	1	25	....	....
Windham	....	6	60	8	10	1	....	22	3	2	5	....	....
Windsor	9	2	29	9	5	1	....	10	27	2	4	....	1
Totals	44	79	312	72	111	37	15	137	113	13	240	1	1

Digitized by Google

MILK STANDARDS AT THE STATE LABORATORY.

By L. P. Sprague, M. D.

From the large number of inquiries received by the Board of Health, it seemed that the standards used in milk examinations at the Laboratory are not well understood throughout the state. The object of this paper is to briefly explain these standards, so that the reports will have greater significance.

There are three standards used in the examination of milk as follows: 1, chemical; 2, microscopical; 3, physical (cleanliness).

1. Chemically, the milk must contain not less than 12 per cent of total solids and not less than 8½ per cent of solids not fat, nor less than 3¼ per cent of milk fat. The chemical analysis includes the well-known Babcock test for fat and the specific gravity taken with the lactometer, the total solids and solids not fat being calculated from the figures obtained by the preceding tests (Babcock and lactometer). The samples which are low in solids are evaporated and the residue weighed, thus obtaining the exact percentage of solids. If watering is suspected, the Zeiss immersion refractometer is used. The addition of water to milk perceptibly affects the degree of refraction of its serum, so that with this instrument added water is easily detected.

2. Microscopically, the milk is examined for pus and extraneous matter. Extraneous matter simply means dirt and has no relation to pus or diseased conditions. The modification of the method used by Stewart of Philadelphia is used in the examination for pus. A glass tube holding 1 c. c. is filled with a thoroughly mixed sample of milk and the ends closed with rubber stoppers. These are placed in an aluminum disk and centrifugalized for ten minutes at a speed of from two to three thousand revolutions per minute. The sediment, including bacteria, pus, fibrin, etc., thus collects on the rubber stopper at the outer end of the tube, while the cream collects at the opposite end. The stopper holding the sediment is carefully removed and rubbed on a glass slide over a space of four square centimeters, a drop of filtered water having previously been placed on the slide so as to spread the smear evenly. This is dried, stained with Jenner's stain, and examined with a 1-12 oil immersion lens. By this method of staining it is easy to differentiate between the lymphocytes and the polynuclear leucocytes. The latter only are counted in the estimation of pus, pus being an aggregation of these polynuclear leucocytes which have collected to protect the part against the invasion of disease-producing bacteria. As some leucocytes are found in all milk, it is necessary to have a limit beyond which these leucocytes are abnormal and are considered as pus. The limit which fixes the standard at this Laboratory is five hundred thousand per c. c. While this is a somewhat arbitrary standard and should be supplemented by an actual examination of the herd, we believe it to be high enough to work no injustice

Digitized by Google

toward the producer, and that milk containing a larger number of leucocytes is unsafe to use.

In setting this standard, consideration was taken of the following facts: a. Only about 1 per cent of all the milk samples examined at this Laboratory contained this number of leucocytes. b. In an examination of the milk from sixty healthy cows at the Experiment Station Farm no one of these had a leucocyte count of five hundred thousand per c. c. Two had a count of four hundred thousand per c. c. One a count of three hundred thousand per c. c. One a count of two hundred and ninety thousand per c. c. Three a count of between one hundred and two hundred thousand per c. c. The remainder varied from four thousand to sixty-six thousand per c. c. The above counts included the lymphocytes as well as the polynuclear leucocytes. c. Studies in other laboratories, notably the Maryland Experiment Station and the Wisconsin Experiment Station, show that while apparently healthy cows may at times give a milk having a leucocyte count of over five hundred thousand per c. c., that from these herds there could be picked no group of ten cows which at any one time gave as high a count as this.

It thus seems that a mixed sample of milk having a leucocyte count of over five hundred thousand per c. c. means that there is one or more diseased cows in the herd. Some of the diseases which cause pus in milk are as follows: Garget, tuberculosis, hard or lumpy udder, not giving milk from all four teats, abscess of the udder, milking cows up too near calving, and too soon after the calf is dropped, cows in poor physical condition, bruised or otherwise injured udders, and all other inflammatory conditions of the udder. As is seen, these conditions may be more or less transitory, so that milk which has been condemned for pus once is not condemned for all time, the diseased animals having recovered or been removed from the herd.

It is hoped that more light will be thrown on this subject of pus in milk during the coming year, as it is a subject of investigation at several laboratories. This Laboratory will continue its work on all samples analyzed and at the Experiment Station Farm.

3. Physically, the milk is examined for dirt and other foreign material which indicate an unclean and unwholesome condition. The standard most commonly adopted for this is the number of bacteria per c. c., but conditions are such in this Laboratory that it is impossible to use the bacterial standard. It is twenty-four hours or over between the time the sample is taken and the time it reaches the Laboratory, the milk being taken in all parts of the state and shipped under various conditions. The bacteria would thus multiply enormously between the time the milk is delivered to the consumer and the time it reaches the Laboratory. A bacterial count under these circumstances would be manifestly unfair to the producer and dealer.

The standard we have adopted is the sediment found at the bottom of the clean jar in which the sample is collected. The jar is allowed to stand

Digitized by Google

about ten hours in the Laboratory, during which time the sediment settles. The jars are then held up to the light, the dirt and other foreign matter being easily detected. This test is so simple that every producer or dealer can apply the test himself and thus determine whether or not his milk is up to our standard of cleanliness. Simply see if there is a sediment in the bottom of the milk bottle, or, if cans are used, allow the milk to stand ten hours in a clean pint jar. If every dealer would thus keep watch of his milk, and take greater care not to have dirt get into his milk, as well as care in straining, there would be but few in the list of dealers whose milk is below standard.

That the standards we have established are not too high for the average dealer to reach is shown by the large number who have produced milk which meets all requirements.

Digitized by Google

BULLETIN OF THE

VERMONT STATE BOARD OF HEALTH.

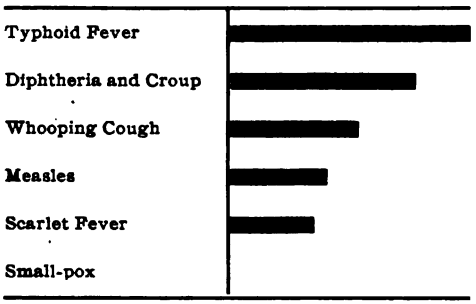
Volume VII. No. 4.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

MEASLES AND WHOOPING COUGH—THEIR NATURE AND PREVENTION.

DEATHS IN VERMONT FROM CERTAIN PREVENTABLE DISEASES. 1901-1905.



As will be noted by the foregoing chart, each of these diseases is the direct cause of more deaths than scarlet fever. This is true in Vermont, and is universally true. The exact cause of none of these diseases is known. Scarlet fever, however, formerly a very fatal disease, and still rightly regarded with fear by the public, is held well in check by the regular methods of quarantine and disinfection. It should be quite as simple a matter to control these less feared, though really more disastrous, diseases by these same methods.

The danger from measles and whooping cough is not measured by the

Digitized by Google

figures given in the mortality tables. It is well known that each predisposes and leads up to other diseases, acute and chronic, which undermine the health and cause death. Both of these diseases are designated, "Children's diseases;" sometimes, "children's harmless diseases." There is a popular notion that every child should have them in *childhood,* rather than run the supposed greater risk of having them in later life. No age is exempt from measles and whooping cough. The death rate from each of these diseases is greater under two years of age, and diminishes steadily thereafter.

The death rate of each is greatest in crowded districts, and among poorly nourished and otherwise weakly children. Under two years of age, and under poor general hygienic surroundings, the death rate from measles runs as high as forty per cent. The mortality from whooping cough under one year is about twenty-five per cent. Neither of these diseases can be recognized, even by physicians, before they are dangerous to others.

The preliminary coryza and cough of measles do not differ sufficiently from the ordinary "cold" to create suspicion. The bluish-white spots (Koplik's spots) on the red background of the mucous surface of the cheeks in measles is an early and important diagnostic sign, but even before the appearance of these spots, most cases are contagious. There is usually a stage of invasion lasting three days which is marked by the symptoms of the ordinary "cold in the head," with more or less cough. It is at this stage that the case endangers the home, and especially the *school.* When the eruption appears and the character of the disease is easily recognized, it is too often the case that the damage has been done. Playmates at home and in school have been exposed, and the inevitable epidemic follows. With whooping cough, the diagnosis usually is not made until the stage of characteristic paroxysmal cough is reached. The result is apt to be the same as in measles; the community is thoroughly exposed before the diagnosis is made in the first case.

Measles and whooping cough are reportable diseases, under the Vermont law; not only physicians, but parents, are required to make reports of all cases. Physicians are required to report *suspicious* cases, as well as those known to have these diseases. Children with measles and whooping cough should *be kept at home.* They should not be allowed on the street. If other children in the home have not had the disease, the case should be kept apart from these. *Isolation* is the only prevention of these diseases. Unfortunately, parents and teachers do not regard "colds" with any seriousness. Hence the stage of invasion of measles and whooping cough is too often allowed to escape notice.

Parents should learn that children with catarrhal colds are sick!

Teachers should not allow in the schoolroom children whose noses and eyes are running and who are coughing!

School boards should back up teachers in excluding such children from the schoolroom.

Digitized by Google

The prevention of measles and whooping cough in the present state of our knowledge hinges on these propositions. Incipient and unrecognizable cases of measles and whooping cough will then be prevented from endangering others. In this way, closure of the schools later will often be avoided, and an epidemic nipped in the bud.

When the diagnosis has been made, the child is isolated at home, and other children of the family who have not had the disease, should stay at home. These latter should be under close observation for the preliminary symptoms of either disease. The child with measles or whooping cough should be treated as a child that is sick and a danger to other children. The isolation should be in one or two rooms, well apart from the living rooms of the house. The sick rooms should have plenty of air and sunlight.

While there is not the same danger of the infection from these diseases being carried by third parties or clinging to clothing and furnishings as is the case in scarlet fever, nurses and physicians should exercise care in going from these cases to other children.

Measles should usually be isolated three weeks, or until all catarrhal sequelæ or complications are over. Whooping cough requires an isolation of about six weeks, or until the paroxysmal cough is well. During the convalescence, which seems long, these cases should still be kept strictly at home. Complicating bronchitis or pneumonia may prolong the isolation in either case. Disinfection is to be recommended after either disease, especially if the room is to be occupied by other children who have not had the disease.

ICE CREAM.

The season is approaching when ice cream will be very generally on the market. The required *purity* of this article, under the pure food law is as follows:—

1. *Ice Cream* is a frozen product made from cream and sugar, with or without a natural flavoring, and contains not less than 14 per cent of milk fat.
2. *Fruit Ice Cream* is a frozen product made from cream, sugar, and sound, clean, mature fruits, and contains not less than 12 per cent of milk fat.
3. *Nut Ice Cream* is a frozen product made from cream, sugar, and sound, non-rancid nuts, and contains not less than 12 per cent of milk fat.

Town clerks are hereby reminded that the abstract returns of vital statistics for the first six months of 1907 should be forwarded to the office

Digitized by Google

of the Secretary of the State Board of Health not later than August. Failure to do this may involve a heavy penalty. See Act 190, Laws of 1906.

The following definition of a nuisance was recently given by a New York court:—

A nuisance consists in unlawfully doing an act, or omitting to perform a duty, which act or omission (1st) annoys, injures, or endangers the comfort of persons; or (2d) offends public decency.

An examination of persons who wish to engage in the business of embalming human bodies for burial will be held at St. Johnsbury, Thursday morning, June 6, 1907.

Digitized by Google

NINTH ANNUAL

SCHOOL OF INSTRUCTION FOR HEALTH OFFICERS

BURLINGTON, VT.

JUNE 17 TO 20, INCLUSIVE, 1907

PROVISIONAL PROGRAM*

* Subject to slight modifications.

MONDAY EVENING, JUNE 17, 8:00 O'CLOCK.

Introductory remarks by the President of the State Board of Health, Charles S. Caverly, M. D.

Address: Governor Fletcher D. Proctor.

Address: Walter J. Bigelow, Mayor of Burlington.

Address: F. Thomas Kidder, M. D., Member of the Board.

TUESDAY MORNING, JUNE 18, 9:30 O'CLOCK.

"Vital Statistics," by Cressy L. Wilbur, M. D., Chief Statistician, Bureau of the Census, Washington, D. C.; H. B. Whittier, City Clerk, Rutland.

Discussion: H. L. Stillson, Bennington; C. W. Howard, M. D., Shoreham.

"Pure Food," by C. P. Moat, S. B., Chemist, State Laboratory.

Discussion: Prof. C. H. Jones, Chemist, Experiment Station, Burlington; Arthur Morton, M. D., St. Albans.

TUESDAY AFTERNOON, JUNE 18, 2:00 O'CLOCK.

"Purification of Water," by George W. Fuller, C. E., New York City.

Discussion: F. O. Sinclair, C. E., Burlington; G. F. B. Willard, Vergennes.

Digitized by Google

"Infectious Diseases," by Thomas Darlington, M. D., Commissioner of Health, New York City.

Discussion: C. F. Ball, M. D., Rutland; W. T. Slayton, M. D., Morrisville.

TUESDAY EVENING, JUNE 18, 8:00 O'CLOCK.

"Milk Supplies," with Lantern Slides, by Thomas Darlington, M. D., Commissioner of Health, New York City.

Discussion: L. P. Sprague, Food Inspector, State Laboratory; Prof. C. L. Beach, of Experiment Station, Burlington.

WEDNESDAY MORNING, JUNE 19, 9:30 O'CLOCK.

"Disposal of Sewage," by Prof. C. E. A. Winslow, Massachusetts Institute of Technology, Boston, Mass.

Discussion: Prof. J. W. Votey, Burlington; C. W. Peck, M. D., Brandon.

"Work of Laboratory," by B. H. Stone, M. D., Director and Pathologist, State Laboratory.

Discussion: Hon. C. C. Fitts, Attorney General, Brattleboro; C. E. Clark, M. D., Burlington.

WEDNESDAY AFTERNOON, JUNE 19, 2:00 O'CLOCK.

"Duties of Health Officers," by H. D. Holton, M. D., Brattleboro.

Discussion: S. H. Seeley, M. D., Richmond; S. W. Butterfield, Weathersfield.

"Laws Relating to Public Health," by Hon. Guy Bailey, Essex Junction.

Question Box.

The Vermont Society for the Study and Prevention of Tuberculosis will take charge of the remainder of the meeting, with the following program, Dr. W. N. Bryant, President of the Society, presiding:—

WEDNESDAY EVENING, JUNE 19, 8:00 O'CLOCK.

Address: "Clinical Diagnosis of Incipient Tuberculosis," by E. O. Otis, M. D., Boston, Mass.

Discussion: D. C. Hawley, M. D., Burlington; S. E. Darling, M. D., Hardwick; W. N. Bryant, M. D., Ludlow.

ANNUAL MEETING OF VERMONT SOCIETY FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.

Digitized by Google

THURSDAY MORNING, JUNE 20, 9:30 O'CLOCK.

Address: "Sanatorium Treatment of Tuberculosis," by Frederick L. Hills, M. D., Superintendent of the State Tuberculosis Sanitorium, Rutland, Mass.

Discussion: D. D. Grout, M. D., Waterbury; H. H. Swift, M. D., Pittsford.

Paper: "Home Treatment of Tuberculosis," H. H. Lee, M. D., Wells River.

Discussion: J. N. Jenne, M. D., Burlington; W. L. Havens, M. D., Chester Depot.

ACT NO. 90, OF LAWS OF 1900, AUTHORIZES THE ESTABLISHMENT OF A SCHOOL OF INSTRUCTION FOR HEALTH OFFICERS OF THE STATE.

In accordance with the provision of this law the Ninth Annual School for the Health Officers of the State will be held in Armory Hall, Burlington, opening Monday evening, June 17, at 8 o'clock. All health officers of the state are hereby notified and called to be present on that date to attend the sessions of said School. Only in case of his sickness will any health officer be excused for non-attendance; such excuse must be filed with the Secretary.

Per order of the State Board of Health.

HENRY D. HOLTON, *Secretary.*

This School is held for the purpose of giving instruction to health officers.

Every member of a local health board should register immediately on arrival.

The public are invited to be present, as every citizen will be equally interested and instructed.

Arrangements will be made with the railroads of the state to give convention rates to all those attending the School.

The Laboratory of Hygiene, 196 Main Street, will as usual be open at all times to visiting health officials, and all are expected to make free use of the Laboratory rooms.

A register of the School will be open at the Armory, where hand baggage and overcoats may be checked at any time. Those who wish board in private families will find there a list of boarding houses.

Digitized by Google

Digitized by Google

Z 14.0979
V 2 B

Bulletin No. 1, Volume VIII.

Issued Quarterly by

Vermont State Board of Health,

September 1, 1907.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS:

Address at Opening of Ninth Annual School for Instruction of Health Officers, by Charles S. Caverly, President of State Board of Health.

Address by Governor Fletcher D. Proctor, Proctor, Vt.

Address by Walter J. Bigelow, Mayor of Burlington.

Disposal of Sewage, by Prof. C. E. A. Winslow, Massachusetts Institute of Technology, Boston, Mass.

Purification of Water, by Dr. G. F. B. Willard, Vergennes, Vt.

Pure Food Law.

Milk Examination at the State Laboratory.

News Items.

BRATTLEBORO, VT.

1907

Digitized by Google

Digitized by Google

ADDRESS AT OPENING OF NINTH ANNUAL SCHOOL FOR INSTRUCTION OF HEALTH OFFICERS.

By Charles S. Caverly, President of State Board of Health.

Health Officers, Ladies and Gentlemen:—

In behalf of the State Board of Health it is a genuine pleasure to welcome you again to this Health Officers' School—the ninth held in Vermont. Most of you know the history of this institution, for such it has now become; you are familiar with its purposes.

This School was the outcome of an enthusiastic revival of interest in the public health which had given us a State Laboratory.

The beginning of intelligent and practical interest here in Vermont in public health matters dates back more than thirty years, when a little handful of public-spirited men, chiefly physicians, instituted a movement for a State Health Board. After several discouraging encounters with the legislature the movement met success in 1886.

This date marks the first step in our modern health movement. The first act, passed at this time, created a board of three persons to be known as a State Board of Health, made a small appropriation for its support, but gave the board little authority. It was mainly an advisory board. Later came the establishment of local boards, and these, with the State Board, have gradually been given more and more authority. From these beginnings have come our now numerous public health laws; laws dealing with the collection of vital statistics, the conservation of water supplies, the safeguarding of public buildings, especially schoolhouses, the care of the health of school children, protection against contagious diseases, including tuberculosis, the regulation of embalming, the protection of food supplies, and so-called anti-spitting laws.

Since Vermont entered on this crusade against preventable disease, two decades ago, there have been two legislative enactments of which every Vermonter should be proud, viz., the creation of a State Laboratory of Hygiene, and the provision for the support of this School. The establishment of these two institutions placed Vermont at once in the van in the universal crusade against disease.

From small beginnings and modest aims, the Laboratory has grown into an institution well-nigh indispensable to our people. Its investigations, in the words of the statute, "free to the people of the state," are taken advantage of by all classes and conditions, and the accuracy of its findings, I believe, inspires general confidence. Primarily intended for a Laboratory of Hygiene, it has developed into a pathological and chemical laboratory of prime importance to the criminal courts of the state. With these later

Digitized by Google

added duties sadly taxing its capacity, and occupying much of the time of its officers, we must not forget that this Laboratory is still a Laboratory of Hygiene; that its greatest usefulness to our people consists in helping us to fight disease, and not crime.

The Laboratory has placed within our reach facilities for exact public health work, and should give precision and effect to measures intended to combat disease.

Modern science has discovered certain laws for the prevention of disease, and the legislature has written these into our statutes. The Laboratory should make these effective.

With adequate laws and laboratory facilities of the best, Vermont should be a healthy state. Our deathrates should be cut in two and general wholesomeness should prevail.

Laws will not enforce themselves; the most complete laboratory facilities will avail little, unless they are made use of by intelligent and careful officers of health, and they in turn backed up by intelligent public opinion.

This School owes its origin to a realization of both these facts. We must have educated officials; and the public must be taught. It should accomplish both these results.

Of the 246 health officers in Vermont, 139 are physicians. While the routine curriculum of most of our medical colleges gives little space to the subjects most closely allied to modern public health work, it is undoubtedly true that the average doctor's education more nearly fits him for practical sanitary work than the training received by other professions and callings. The doctor comes in closer touch with our health administration than any other person in the community. He first sees the contagious disease and should be the first to recognize it.

He is the man who should most quickly detect unhealthy influences in the community; who should be able to suggest prompt preventative measures. He officiates at the extremes of life, and is chiefly responsible for correct registration returns.

Yet we all know that the average doctor does not always possess all the varied knowledge that the modern sanitarian needs. He is not usually well versed in the law; he has seldom the engineering knowledge which the solution of sanitary problems requires; and he frequently lacks the tact and business acumen that fits the model health official to deal smoothly with the people and their chosen officers.

So however well equipped the physician may be to deal with disease in its technical aspects, he may still lack something that is required of the practical sanitarian. The practical sanitarian must be something of a lawyer, an engineer, as well as doctor, and, withal, a tactful and resourceful man. So it comes about that some medical men, who are health officials, lack certain qualifications which laymen possess; that some of our best health officers, measured by results attained, are laymen.

This School is planned to supplement the equipment of both physicians

Digitized by Google

and laymen for the office of health officer. The doctor may here learn something apart from his professional knowledge; the layman, something of the technical nature of disease-causes and the rudiments of prevention.

In this connection it may interest you to know the appreciation in which this School is held. We have a register of attendance at the sessions of this School from the beginning. There may have been failures on the part of some health officers to register, but it is believed the following figures are substantially correct:—

The average attendance of health officers during the eight years of the School has been 111 per year. Or there have been 135 towns on an average unrepresented here each year. It should be stated in this connection that the attendance during the last five years has averaged better than this, being considerably over half the whole number of towns.

It will surprise you to know that 37 towns have never sent their health officer to the School. These are: Goshen, Granville, Hancock, Leicester, Whiting, Pownal, Searsburg, Woodford, Norton, Victory, Washington, Brownington, Glover, Jay, Westmore, Clarendon, Ryegate, Waterford, Huntington, Bloomfield, Brunswick, East Haven, Guildhall, Lemington, Maidstone, Mendon, Duxbury, Dover, Dummerston, Grafton, Marlboro, Wilmington, Windham, Baltimore, Plymouth, Sharon, West Windsor.

There can be no sort of doubt that these towns are missing something. It might be suggested that the health officer of each of these towns ought to be awakened to the opportunities of this School. The people in each should stir up that official and insist that he keep in touch with his fellows, or resign in favor of someone who will attend. There are, too, many towns which have been represented here only once or twice.

The state pays the bills for this School. Health officers are entitled to four dollars a day and actual expenses from their towns while in attendance here. It should be the exception that a town fails of representation. That so many fail is disgraceful, for it betokens an ignorance or a disregard of healthful community life that deserves, in this day, nothing but criticism.

I appreciate that most of these towns are small rural communities, with small grand lists and little preventable sickness. I believe that the one might be increased and the other lessened, if the people had the benefit of intelligent sanitation. It is a universally recognized fact that public health expenditures pay. They pay small towns as well as large. They pay in making them better places for residence or business, thereby increasing values. They pay in the avoidance of avoidable expense and sorrow.

For whatever reason these 37 towns have failed during these eight years to be represented here, whether through carelessness or motives of economy, it is unfortunate for them and it is unfortunate for the state.

Every town is somewhat at the mercy of its neighbors in matters affecting health. Every town owes a certain duty to the state at large, one of which is to so guard its own healthfulness that it may not by any possibility jeopardize the whole. It is the duty of every town in Vermont to send its

Digitized by Google

health officer to this School. On the other hand, it is gratifying to know that this School is appreciated by some of the towns, and that they are getting all possible benefit from it. Thirteen towns have never failed of representation at these sessions. These are: New Haven, Bennington, Lyndon, Burlington, Charlotte, Hinesburg, Shelburne, Brighton, Fairfax, Stowe, Grand Isle, Rutland City, Marshfield. There are, besides, 20 towns that have but once failed to be represented at the School during the eight years of its history.

It should be said again that health officers who have attended these sessions faithfully should be sure of their tenure of office. They have fairly earned the right to administer the health offices of their towns. Such men should not be displaced, except for excellent reasons. Their towns have a right to their services. I know of no surer criterion by which to judge the efficient health officer than that furnished by the register of this School.

This Health Officers' School is then an important adjunct of our state equipment against disease. Its benefits should reach to every hamlet in the state; it should have, through you who attend, an influence on public opinion in the state that would render public health laws easy of enforcement.

It would be interesting to know exactly what effect our public health laws have had on the healthfulness of our people. It is possible, however, to gain some light on this head from statistics furnished by our registration returns of deaths.

The prevention of those diseases which we have been taught to consider preventable is really the chief function of health departments, state and city. The list of preventable diseases is, as you know, yearly growing longer. Our registration returns are all the time becoming more complete. They date back 50 years. We may profitably give them brief notice.

To this end I present some charts founded on these statistics. They deal with figures representing the number of deaths annually from some of our most fatal diseases, and may be considered as accurate as any similar statistics in this country.

The general death rate does not decrease. Indeed we have to record rather more deaths now than formerly. An explanation of this fact may be found in at least two directions: First, there are more people now than formerly living to that age which we know invites certain diseases, like cancer, apoplexy and heart disease. We have not yet found the microbe of old age. These diseases of senility we may not yet prevent, except as we may warn our people against the dangers of the strenuous life.

Again, our statistics show more deaths than formerly because they are more complete. For these reasons the curves of old age and its diseases have an upward tendency.

The gratifying part of this inquiry is shown in the chart for "Longevity." Human life is longer than formerly. The average age at death has risen from 38 to 48 during the last 50 years. We may regard the charts dealing

Digitized by Google

with the infectious and preventable diseases with mingled feelings. With the exception of pneumonia, the lines generally have a downward trend.

Pneumonia has displaced consumption as the worst foe to human life. This disease is now generally classed with the preventable and reportable diseases, yet its prevention is not yet seriously attempted by our health boards. The uniformity of the curves of this disease and influenza is suggestive. It emphasizes what we have long known, that the grip is an important factor in the causation of pneumonia. The exact cause of pneumonia and its method of conveyance are being widely studied, and it goes without saying that health boards must ere long address themselves earnestly to the task of preventing this disease.

Tuberculosis has slowly but steadily given way to the preventive crusade so universally being waged against it. Vermont has kept pace with the rest of the world in this respect. Our death rate from consumption has shrunk over 40 per cent during the last 25 years. These figures give plausibility to the sanguine forecast which predicts the early extermination of this disease.

The diseases against which the energies of health boards have been focused since the organization of such boards are those distinctly preventable infections, smallpox, diphtheria, scarlet fever, measles, and whooping cough. These diseases formerly prevailed without let or hindrance. They were looked upon as inevitable, a part of the universal plan. The only immunity which might be enjoyed against them was in having them.

Vaccination long since robbed smallpox of its terrors, and the disease as we know it, while as loathsome and almost as dreaded, is shorn of its worst features. What vaccination did to smallpox, antitoxin is fast doing to diphtheria. In the discovery of some form of preventive inocculation lies our hope for scientific prevention of these other infections.

The charts which show the prevalence of all this class of diseases are instructive. Diphtheria destroyed over 1,300 lives in this state in the year 1863. This was probably the greatest epidemic Vermont had known since the great spotted fever days of 1812-14. Scarlet fever caused 400 deaths in 1874. Typhoid fever, formerly the regular fall visitor to our rural communities, twice caused 400 deaths in a single year. Such happenings at this day would cause a panicy feeling; would be heralded widely as an unnecessary calamity. The restriction of these infections may be fairly attributed to organized sanitation.

And the question presents itself, If these diseases can be reduced to so small proportions, is there any rational excuse for their continued existence?

This question has especial reference to typhoid fever. We know a good deal about the cause of this disease. If the death rate from this source can be reduced from 400 to 100 annually, why not to 10 or nothing? That someone is criminally liable for every death from this disease has a harsh sound, yet we have often heard it stated, and must admit that it has some basis of reason. The typhoid germ always comes from its victim via the ex-

Digitized by Google

cretory organs, its vehicle is food and drink (usually water) and its prospective victim must swallow it. If a person insists on drinking sewage, he will sooner or later be quite likely to acquire typhoid fever. Yet there are many communities everywhere furnishing sewage to its people for a water supply. I am ashamed to say that there are such in Vermont.

Between the laws of the state and the enlightening influences of this School, water-borne typhoid in Vermont is bound to become a rarity. The vexed questions of sewage disposal and pure water supplies will sometime be settled by an enlightened public sentiment. We have given these topics prominent places in the program of the School this year as formerly.

Another fact, not entirely creditable to preventive medicine, appears in these charts, viz., the relative mortality in our state from measles and whooping cough. These so-called "children's diseases" cause more deaths than the severer exanthem, scarlet fever. This is true the world over; it is not peculiar to Vermont. We know as much and no more of the causes of these two diseases as of scarlet fever; yet we hold the latter in check by the old-fashioned and homely measures of quarantine and disinfection.

Waves of measles and whooping cough spread over the state, playing havoc in the home and school, and laying the foundation for more ailments than the mortality tables indicate. Health officials, like the medical profession, and parents, and teachers, look on helplessly. Why is this so? There are various reasons; we do not know the exact causes of these ailments, they begin like innocent colds, and, largely, because they are not seriously combatted.

The public must be educated in the dangers of these diseases, in their preventability. This education should begin with health officials, and should be aided by the medical profession.

I appreciate that this is not the time to enlarge on the lessons that might be drawn from our mortality statistics. Yet at the opening of this School, we may properly take this cursory glance at these figures, as indicating some of the uses to which these sessions may be put. As I have said, these meetings should have their influence on the healthfulness of our people.

We have laws enough. I sometimes think there are too many. Perhaps our laws have been in advance of popular education. Unless supported by public opinion, laws are apt to be impossible of enforcement. The prevention of these diseases which I have mentioned depends not only on the energy and vigilance of the health officer, but equally on the support given him by the public. Nothing spurs a health officer on to the discharge of his duties like the demands of enlightened public sentiment. We must make it unpopular to break the laws of health.

This School should have this effect. It should create a demand for the latest and best in the world of sanitation. There is more in this School than the technical instruction we get here. The benefits of mutual conference and discussion, and the inspiration inseparable from listening to recognized authorities, may give us confidence in our work, and more, it

Digitized by Google

may give us enthusiasm. We should all carry home from these meetings a goodly amount of that enthusiasm which is contagious.

I have stated to you very briefly, not too frankly, I trust, some of our sanitary shortcomings. I should be sorry if my remarks were suggestive of a spirit of scolding or of pessimism.

It would perhaps be more in harmony with our feelings, as we renew acquaintance and friendship at this opening session of the School, if we indulged more freely in self-congratulation on the past and the prospect for the immediate future.

Sanitary science is in its infancy. We have only begun to appreciate its possibilities. The things now known and those accomplished make the future full of promise. The marvelous record of preventive medicine in connection with smallpox, yellow fever, diphtheria and malaria has raised our expectations of things to come.

We live in a time when every day adds its quota to our store of sanitary knowledge; when the sanitarian who would keep in touch with the times must go to college every year. This School is such a college to us. We live in a state intended by nature to be a sanitary paradise, where every death certificate should assign, as the cause of death, "old age." It is for us to bring our time and our state together; into complete harmony.

ADDRESS.

GOVERNOR FLETCHER D. PROCTOR, PROCTOR, VT.

These annual gatherings or schools for health officers in Vermont have become so well established and have come to be recognized as such splendid helpful institutions that they certainly need no endorsement or encouragement from any one. They have shown themselves to be so practically useful and helpful that they have become in reality necessities. It seems to me that they are the clearing house, the medium of exchange, between health officers and those especially interested in public health matters in Vermont.

We all, health officers, *the profession,* and laymen, owe much to the State Board of Health for having started and permanently established these annual gatherings. By thus coming together in this way we are able to get the benefit of the experience of all the others. What may seem impossible in one part of the state has been successfully tried and proven in another part. We are in this way able to get not only knowledge—for I believe all the health officers do obtain knowledge by coming here—but

Digitized by Google

courage and caution as well; for while one may need courage, another very often needs caution.

We hear about a better, a greater, or even a new, Vermont. Those using these terms mean about the same thing. It comes right back to the generally improved condition in Vermont. The general public in the use of these words have in mind railroads, banks, state institutions, highways, taxation, schools, etc. If public health matters enter their minds at all, they are too much inclined to relegate them to the profession. This is where the general public makes a mistake. The pioneer and one of the most important steps taken in Vermont in the last thirty years was the creation of a State Board of Health, placing and keeping strong men upon that board and giving them increased power and authority. The layman is slow to see and appreciate this point. They lose sight of the fact that the public health means more to the layman than to the profession. It is the layman who is benefited by quarantine and disinfecting, who is benefited by better sewage and purer water, who needs protection from impure and adulterated food, whose child is saved by purer milk, into whose homes has the blessing of the Laboratory come for the past eight years. We are slow to see and appreciate all this. The State Board of Health and the local health officers must often become exceedingly discouraged in finding the public not only out of sympathy, but even hostile and attributing selfish, unworthy motives to their action. You can all, however, take great hope when you consider the progress that has been made in the last twenty years. You can take great satisfaction that you are doing a great, unselfish public service, and one in which you must be the pioneers.

Personalities upon occasions of this kind are usually to be avoided. But for the last twenty years I have been more or less interested in public health matters and have watched their growth in Vermont, and it is my candid opinion that the people of the State of Vermont owe a great deal to Dr. Caverly and Dr. Holton for the service they have rendered along these lines Not all of our people have agreed with them in all of the positions they have taken; but this is not strange in a pioneer matter of this kind that must necessarily run counter to long established customs and usages. Their work has, however, been honestly, ably and at all times fearlessly performed, and I believe that the State of Vermont is to be congratulated upon having had such service. It seems to me that the work is well started; that the people of Vermont are fast coming to see its importance, yes, it necessity. As health officers you must remember that the battle is far from won. The fight must be a continuous one, and as health officers and representatives and protectors of the public health of the State of Vermont, you must ever lead and keep up the fight for the pure food and the pure water. You must enforce strict quarantine; you must see that the State Laboratory of Hygiene is used by the public whenever and wherever it can be of any service to the people. You must see to it that the movement is

Digitized by Google

always forward to have these things, and if we are to have a better, a greater, or even a new, Vermont, we must in all public health matters keep in the front rank.

ADDRESS.

BY WALTER J. BIGELOW, MAYOR OF BURLINGTON.

I am very glad to bid you welcome to this city on this occasion. A welcome to the State Board of Health and to the health officers of the State of Vermont is somewhat different from the general welcome to other bodies that meet here. The people who generally meet here come to discuss the methods of advancement in their particular line, but in the case of the health officers, I would say there is no necessity for a formal reception; it seems to me it should resolve itself into an annual reunion, and instead of an attempt at a long speech, I think the people of Burlington ought to throw off all formality and extend their hands and greet you in the words of some of your patients, "How be ye, anyway?"

I see no reason why you cannot have a medical picnic here. You certainly brought picnic weather with you and we are very grateful to you for that. Burlington opens her heart to you all and that is always a pleasure to a doctor. You certainly ought to have a good time here as well as a very profitable one.

These meetings mean something more than a good time and there are other reasons why you should rejoice. You should rejoice in the work you have to do; it is not theoretical work. It is not to put forward ideas which will last for a day. It is more a question of science. Every step you take is taken with a certainty that it will not only increase your powers, but also the benefits that you are doing to mankind. The work of the health officer is one of the most important to be found because health is the most valuable asset that can come to a person or a community at large. If one has not the health to carry out ideas, plans, and methods of work, and talents, etc., he cannot amount to much in the world. It makes no difference how strongly you are physically equipped if you disregard the laws of health, you cannot become one of the leaders. And you, health officers, are increasing one of the most valuable assets of the general public—good health.

I want to emphasize the idea that there is greater need for further study along this line. I wish to say that Burlington has not been so unappreciative as it appears. The struggle here in Burlington has been a struggle between the idea of doing something because it is cheap and doing something because it is right and safe. These two elements have been contending with each

Digitized by Google

other here for some time and I am sorry to say that it appears to be the cheap element which seems to be in the ascendant at present. We are at work, however, and I hope when you meet here again, we will be able to give you as good drinking water as you will be able to find in any point in the State of Vermont.

Your work must continue and you must work harder. In looking over statistics, I notice that Vermont has not the lowest death rate of any state in the Union. There certainly is no state in the United States where the natural advantages are greater, so this establishes the fact that there is a lack of proper attention to the following out of the rules of health, and in attending to this neglect you will find one of your important pieces of work. Vermont should not be the sixth or the seventh state, as it is now, in the Union in this low death rate. The statistics show that some of these preventable diseases are more common in the country than in the cities. That is not as it should be. The country certainly has the greater natural advantages. All it lacks to be the most healthful place on earth is the determination to obey the rules and laws of health, and it should be the aim of all of you gentlemen here, who live in these sections where so little attention is given to these duties, to try to develop those rules laid down by the health department.

An effort is being made for the improvement of the milk supply in the city of Burlington. In talking with people who are well acquainted with that subject, I was astonished to have them tell me that the people of the State of Vermont did not have as good milk as do the people of New York City. That is a terrible thing to say against a state that has been so proud of its dairy interests. It is a blot upon the reputation of the State of Vermont which can be removed if you one and all go at it with the determination that we shall have a milk supply equal if not superior to any other state in the Union. Burlington is taking a step in that direction by requiring every person who sells milk within the city limits to take out a license and before granting them a license they must produce milk which comes up to a certain standard. We are in the lead in this matter, I am glad to say, and I hope you will all take up this work when you return to your different communities. We are also discussing the matter of furnishing for Burlington people a sanitary milk. This is a serious problem. The production of sanitary milk is very difficult. The people, however, are beginning to think of it. The more they think of it, the more they want it. I really am glad to say that I think Burlington is taking the lead in improving its milk supply and that certainly is taking a forward step in the development of the city.

You have other speakers who will advise you so I will not take any more of your time. I bid you welcome and Godspeed in your undertakings here.

Digitized by Google

DISPOSAL OF SEWAGE.

By Prof. C. E. A. Winslow, Massachusetts Institute of Technology, Boston, Mass.

I feel it a great privilege to address this School of Instruction for Health Officers. Vermont was the first state in the Union to inaugurate such an institution, and I think the step taken in the formation of your School and the success with which its sessions have been attended, has already influenced in a marked degree the progress of sanitary work all over the country. A number of states have followed you in this matter. Schools similar to yours have been held with special success in Ohio and New Jersey, and I look forward to the time when all of our states will be able to testify to the same experience.

The one object which binds us all together, whether we are working in the chemical or bacteriological laboratory, or in the office of the designing engineer, or as local health officers, is the prevention of transmissible disease. Such diseases proceed always from infected persons to susceptible victims by paths which may be quite direct or most circuitous. In all cases our common task is to break the chain of contact at some vulnerable point; and in many diseases, notably those of the alimentary tract, two such points offer especial opportunities for the attack of the sanitarian. These are the points at which infection leaves the body of the sick person and enters the body of the well one. Between these two definite episodes the history of the disease germ in the environment is a various and uncertain one; but excreta may be disposed of, and food supplies guarded from pollution, with reasonable assurance of success.

Efficient protection at both ends of the chain is essential in order properly to safeguard the community. Dr. Darlington eloquently pictured to us last night the dangers which surround the milk supply of the city and showed how essential it is that milk should be produced under cleanly conditions. Yet even after every precaution has been taken, milk when it at last reaches the consumer, must be pasteurized if we would be absolutely certain of its safety. So with regard to water, it used to be said that an unpolluted supply was preferable to a filtered one because "innocence is better than repentance." We have come round to-day to a pessimistic belief in the well-nigh total depravity of water supplies,—from surface sources at least. Sanitarians hold, as Mr. Fuller said yesterday afternoon, that all surface supplies without exception should be purified, yet the obligation to keep them as innocent as possible, before the day of repentance arrives, is none the less imperative. A polluted stream is harder to purify, it is an esthetic nuisance and an economic blunder; and it is *per se* and outside of its relation to water supplies a menace to the public health.

Digitized by Google

Sewage disposal is a fundamental necessity because the presence of excreta means the existence of continual facilities for the transmission of disease. It is only necessary to study the statistics of communities, in which sewerage systems have been introduced, comparing typhoid death rates before and after that event, in order to realize how serious this danger is. In Berlin, for example, when a pure water supply was introduced the typhoid death rate dropped, but when a sewerage system followed some years later, another decrease in the death rate occurred almost as striking as the first. The reasons are many why sewerage systems thus diminish typhoid fever. The presence of privy vaults is a constant menace to wells and other private sources of supply; but entirely apart from any form of water pollution there are abundant ways in which infection passes from improperly handled excreta to adjacent food supplies. The experience of the United States army during the Spanish War furnished an impressive object lesson along this line. One out of every five of our volunteer soldiers came down with typhoid fever during the brief campaign, in shocking contrast with the almost perfect immunity secured by the Japanese in their scientific progress through Manchuria. This national disgrace was directly connected with improper care of excreta as brought out by the study of typhoid incidence on different regiments. In peace, typhoid fever slays its multitudes every year from the same neglect of the same precautions. Flies play an important part in its transmission as they forage back and forth from vault to larder; and the fingers of the users of unclean privies are rich sources of infection for themselves and others. These are unpleasant truths, but I have no doubt that citizens of the towns you represent are to-day in the position of the bird that fouls its own nest, without being conscious of the fact, and it is your duty to awake them to the truth, however unsavory it may be.

The first step in the campaign against typhoid fever is to secure a public source of pure and wholesome water, thus guarding that food supply which most easily carries infection to large numbers of persons. The second step, only less urgent than the first, is to so care for excreta that infection may not be spread broadcast through various other channels. In many communities this must be done by substituting for leaky, ramshackle privies earth closets of adequate construction. To prevent danger, it is necessary that excreta should be received in some receptacle which is water tight and closed against flies. Earth or ashes should be at hand to cover them at once, and provision must be made for burning or burying the contents at frequent intervals. Light and light's brother—cleanliness—are of course essential in the privy building itself.

The proper maintenance of such earth closets is unquestionably a burden, and anything less than this is a public danger. The cesspool, too, which marks the next step forward, is, after all, only a makeshift, since the average citizen has neither the inclination nor the ability to ensure its proper operation. As soon as possible, therefore, the introduction of a water carriage

Digitized by Google

system of sewerage must follow with the growth of the sanitary conscience. This is the ideal method of disposal for the householder, since it removes all excretal matter promptly and efficiently and meets, without trouble on his part, all sanitary and esthetic requirements. It creates, of course, a new problem for the community as a whole; and it is of this problem that I wish chiefly to speak to you this morning. By the construction of a public sewerage system the problem of disposal is shifted one step away from the individual; instead of the individual having a small amount of waste to dispose of, the municipality has now a much larger problem on its hands—the disposal of all waste materials diluted with a great volume of water. For example, in Boston, on one side of the city, known as the South Metropolitan District, it is necessary in every year to dispose in some way of 1,600 tons of nitrogen as free ammonia alone, representing an enormous quantity of organic matter; and the problem is made so much more difficult by reason of the fact that the organic matter is diluted with thirty billion gallons of water.

In American sewages we find only one part in 1,000 of solid matter; in other words, there are 999 parts of water to be handled, or somewhat more than that, for every part of solid matter. The dangerous elements making up the single part in 1,000 with which we are particularly concerned in sewage disposal may be classed under three heads; organic matter, mineral matter and bacteria. The mineral matter is harmful only under exceptional conditions, when large amounts of industrial wastes enter the sewers and need not be considered here. The bacteria are harmful when the sewage is so discharged as to reach some source of food or water supply. The organic matter is harmful when it decays, and creates a nuisance which may be so serious as to menace health. Such organic matter is composed of unstable molecules, imperfectly oxidized, the history of which may follow two different lines. On the one hand, if it remains out of contact with the air, it may decompose, putrefy, break down, with the production of offensive gases of decomposition. Or, secondly, under the influence of oxygen it may undergo another process that we call nitrification, a slow burning or combustion which converts the organic matter into nitrates, or other mineral substances, without the production of foul odors, and in a wholly satisfactory way. Organic matter must either putrefy or nitrify, and the aim of sewage treatment is to nitrify it. This is a difficult problem, because it involves the supply to that organic matter of one to three times its weight of oxygen, with the special conditions under which the oxygen and the organic matter will unite.

The most obvious way to dispose of sewage is to throw it into the nearest body of water. Before true sewers existed the natural drains discharged into the nearest water source, and when these drains became filled with polluting matter the same plan was followed. Sometimes this works very well. If the volume of sewage discharged into a stream is sufficiently small, there may be enough oxygen to unite with the organic matter and enough organic life

Digitized by Google

in the stream to effect the union. Under such condition there results a self-purification of a very satisfactory type, as far as the chemical constituents are concerned. Disease bacteria on the other hand, although they do die out in water, decrease slowly and uncertainly, so that bacterial self-purification cannot be relied on to make polluted water potable. Even chemical self-purification has its rather narrow limits. The fate of the sewage changes entirely when its volume exceeds the maximum which may be absorbed by a given stream, roughly stated as one part of sewage to fifty parts of water. When that limit is exceeded, when the limit of available oxygen for the oxidation of organic matter is passed, then the conditions of putrefaction are set up. It is like Mr. Micawber's philosophy: "Annual income twenty pounds, annual expenditures nineteen ought and six, result happiness. Annual income twenty pounds, annual expenditures twenty pounds ought and six, result misery." Up to a certain point everything goes well, but beyond that point, conditions are totally changed and instead of a self-purifying stream you find a foul septic tank. Dilution then—the discharge of sewage into water—is limited by the volume of sewage in relation to the body of water into which it is to discharge. On the seacoast the conditions for purification by dilution are ideal; and with large rivers like the Mississippi this method may be followed very satisfactorily. In smaller streams we get the septic tank condition of which I have spoken. In Massachusetts alone there are at least seven rivers so polluted as to become a public nuisance for a part of their course. Most serious of all, when such a condition as this is reached, there is often so deep a deposit of decomposing sludge in the bed of the stream that after the removal of all fresh pollution it remains as foul and unsightly as before. Nothing but expensive dredging operations will suffice to restore a stream so desecrated to its pristine purity. I beg you to take warning from our more thickly settled commonwealth and avoid while you may such problems as we now find before us in the Neponset and the Blackstone rivers.

A second obvious method of sewage disposal is discharge on the surface of the soil; and this plan has been followed from time immemorial. In the little city of Bunzlau in Prussia there was a public water supply as early as 1559, piped from a spring, and in connection with it was installed a sewerage system and a system of disposal on a sewage farm. Later the process of treatment on land underwent development along more intensive lines. As early as 1865 the German engineer, Mueller, urged the disposal of sewage through land at a more rapid rate than is possible on the ordinary sewage farm. He understood the nature of the process and knew that it was carried out by organic life; and in 1878 he patented a system "for the disinfection, purification and utilization of sewage by the scientific cultivation of yeast-like organisms." In 1870 the subject was approached along a different line by the English experts of the Rivers Pollution Commission under the leadership of Frankland. These experimenters failed to grasp the biological character of the process, but they understood its chemistry

Digitized by Google

and showed that sewage could be successfully purified by filtration through various soils, at much higher rates than those used on sewage farms. It was only by work in this country, however, that these various lines of investigation were brought together in so conclusive a form that the importance of the process of intermittent filtration through sand was generally understood. The difficulties experienced by Worcester through the pollution by its sewage of the Blackstone River and the proposition to treat the sewage of Boston and the cities lying to the north, on the Saugus marshes, made sewage disposal an urgent question in Massachusetts in the early eighties. As a result of these conditions the Lawrence Experiment Station of the State Board of Health was founded in 1887 for the study of the sewage purification problem. There, under the leadership of Mr. Hiram F. Mills, with the coöperation of Prof. T. M. Drown and Prof. W. T. Sedgwick, were carried out the series of experiments since sightly spoken of as classic. Ten circular cypress tanks seventeen feet in diameter and six feet deep were filled with various filtering materials—sand, gravel, peat, river salt, loam, garden soil, and clay. The fine materials like peat, garden soil, and clay soon clogged, but the beds of sand worked to admiration, receiving sewage above and yielding a clear, bright spring water below. Some of the original tanks have been operated from the day of their installation to the present, a period of over seventeen years, with continuously good results.

The Massachusetts investigators established very clearly that the purification was an oxidizing process, carried out by bacteria living in the sand, and that a rich supply of oxygen was necessary for their activity. In order to supply the oxygen it was necessary to dose the filters intermittently, putting on perhaps one dose a day in an amount of some 60,000 gallons per acre. These experiments led at once to the installation of a number of intermittent sewage filters in Massachusetts, and in 1903 twenty-three were in operation in different parts of the state, the best known being those at Marlboro, Brockton, Framingham, Gardner, and Clinton; some of them have been in operation now for over ten years. Where glacial drift sand or lake or river sand is available, the construction of such filters is extremely simple. It is necessary only to remove the soil and subsoil, which may be used for embankments between the individual beds; to dig up the sand at intervals for the laying of underdrains to carry off the effluent; and to level the surface of the beds again and place upon them some simple form of wooden carrier to secure a fairly even distribution of the sewage. Some arrangement must also be made for discharging the sewage on the beds, one dose of 50,000 gallons, the sewage of 500 persons, or two doses of half this amount being applied to each bed once in twenty-four hours. This may be done by hand or accomplished by one of a number of very satisfactory automatic devices now on the market.

In the operation of such beds it has been found that a certain amount of solid material accumulates on the surface, but this sledge is of a stable

Digitized by Google

nature, not subject to decay, and can be scraped off at intervals and removed without excessive expense. Cold winter weather interferes somewhat with the efficiency of the process; but by ridging the beds so that the sewage may flow in furrows under the ice, it is possible with most of the filters in Massachusetts to treat the sewage all the year round.

In districts where it is difficult to secure adequate natural sand beds and where the construction of artificial ones would prove expensive, it is important to increase the rate at which sewage may be purified, and this may be done by the combination with intermittent filtration of preliminary treatment in the septic tank. This device is the logical development of the cesspool and the fosses fixées, used in France by Mouras as early as 1860. The principle—that the storing of sewage without access of air led to a sort of fermentation, or ripening, which removed a considerable portion of the solid material—was patented in 1882. Scott-Moncrieff an English engineer, in 1891 used the same process in what he called a cultivation tank, and in 1894 one was installed at Urbana, Ill., by Professor Talbot. The process did not attain wide popularity, however, until after 1895, when Donald Cameron of Exeter, England, gave it the picturesque name of the septic tank. It must be remembered that this scientifically controlled cesspool, as it really is, does not purify the sewage in any real sense. Only oxidation does that, and oxidation requires air. This anerobic fermentation (fermentation without air) serves simply to change solid material to the liquid or gaseous form and thus facilitates its ultimate purification and makes it possible to treat more sewage on an acre of land. Cameron in his early experiments used a tightly closed tank, but he soon found that this was needless; it was only necessary to allow the liquid to flow slowly through any tank, so as to have a storage of about twenty-four hours, the exact length of time varying with different sewages. Under such conditions decompositions take place, which remove from 60 to 70 per cent of the suspended solids, turning a part into liquid form, giving off a part as gas, about 7½ gallons of gas to 100 gallons of sewage, and storing a certain amount of solids in the tank. The proportion of the solids destroyed in the tank—digested, so to speak—varies with different sewages and with the same sewage, at different times, under conditions not thoroughly understood. In some cases the use of a septic tank is much more advantageous than in others. Small towns, however, where the sewage arrives in a comparatively fresh condition at the disposal area, will almost always find it beneficial.

The septic tank and the intermittent filter will generally form the most suitable combination for treating the sewage of a New England town. For small communities or institutions or large isolated country houses a modification of this process may be used which obviates the discharge of sewage upon the surface of the ground—an important esthetic factor under some conditions. This is the method of sub-surface irrigation in which the effluent from the septic tank is discharged through a system of open-jointed tile

Digitized by Google

pipe laid a few inches below the surface of a sandy soil. The principle is the same as that of intermittent filtration. Since the sewage is not in free contact with the air, the process of nitrification is more imperfect and the pipes are liable to clog. In many cases, however, the freedom from the somewhat unsightly surface disposal area outweighs these objections. For small installations a plant of this type may be built very cheaply indeed. Mr. John W. Alvord of Chicago has designed such a plant consisting of a barrel for a septic tank, a half barrel equipped with a simple siphon for discharging the intermittent dose, and a system of tile drainage, all under ground, and costing for labor and materials less than twenty-five dollars.

In rocky and clayey districts even the addition of the septic tank will not serve to bring processes of purification through sand within reasonable limits of cost. In England, particularly, the problem has pressed hard; and there progress has been made along a different line. The chemist of the London County Council, Mr. W. J. Dibdin, undertook in the early nineties to devise some more rapid method of sewage disposal than that worked out at Lawrence. He increased the rate by the use of coarse material, following out the principle that the essential element in purification is not really filtration, but the action of micro-organisms which will grow on broken stone as well as on sand. With such coarse material, the sewage must somehow be retained sufficiently long for the bacteria to act on it, and this end Dibdin attained by making his bed (filled with coke) tight, so that he could fill it with sewage, allow it to stand for a certain period and then empty it. This he called the contact system because the sewage is held in contact with the coke by the closing of the outlet. In further experiments at Sutton in Surrey, Dibdin developed the double contact system, carrying the sewage treated in one contact bed to another contact bed and treating it again. By each contact about half the impurities in the applied liquid are removed. It has been found that in the construction of the contact beds almost any hard, smooth material may be used, the bed being simply a tight box for holding it. Coal and coke are particularly favorable, though stone or almost any other hard substance may be used. The size of the pieces of material, whatever it may be, varies from ⅛ of an inch to 1½ inches. The beds are commonly made from three to six feet deep, or thereabouts, but the depth does not seem to be of great importance. The sewage is run slowly into the bed, allowed to stand for a certain time, generally two hours, and then discharged, three or four fillings being made in the twenty-four hours. With such a system sewage may be treated at five or ten times the rate attainable by sand filtration and the effluent, though never purified to the grade of a good spring water, as the effluent from an intermittent filter may be, is so stable that it will not decay and may be discharged into a river with safety.

A still more satisfactory method by which sewage may be treated at even higher rates is the process of trickling filtration, also devised in England. This process secures the necessary even distribution and aeration by sprink-

Digitized by Google

ling the sewage over the whole surface of the filter bed in a fine spray, so that the oxygen goes in along with it, the sewage never filling the tank, but continuously trickling through the filtering material. One of the advantages of the trickling bed system is the extreme simplicity of its construction. Some kind of floor sloped to carry off the drainage is needed, but aside from this the material used can be held together by wooden palings or iron bands or any very simple structure around the outside. The depth is generally four feet or over, and as in the case of the contact bed, any hard material may be used, varying in size from ⅛ inch to 1½ inches.

A serious difficulty arises in regard to the distribution of the sewage, which must be so applied as to pass through slowly and well mixed with air. The plans for filters at Columbus, Ohio, like the latest English designs at Birmingham, call for fixed sprinkler heads which throw the sewage up into the air in a fine spray. This device is a good one and may be much improved by the addition of siphon tanks which intermit the discharge at frequent intervals so as to expand and contract the cone of spray and spread the sewage evenly. In the course of our experiments at the Technology Sewage Experiment Station, we have devised another method of distribution which may offer especial advantages in certain cases. This consists of a system of troughs from holes in the bottom of which the sewage drops upon concave discs from which it splashes upward in a fine and well spread spray. This system of gravity distribution was described in the *Engineering News* a year ago and has since been adopted by the Massachusetts State Board of Health for the experimental sewage filter at Andover.

With good distribution, the rates which may be obtained by the trickling process are very high. The intermittent sand filter will take at the outside 100,000 gallons, and the contact bed 500,000 or 600,000 gallons per acre per day; the trickling filter, on the other hand, easily treats 2,000,000 gallons per acre per days, giving an effluent on the whole better than the contact bed, though not so good as the sand filter. It contains a considerable amount of suspended solids and does not look as clear as the effluent from the contact bed. But it analyzes well and keeps well, which are the principal points to be considered. Furthermore, its solids may be easily removed by a short period of sedimentation.

Returning to the distinction originally made between the chemical and bacterial constituents of sewage, it must be remembered that these rapid processes affect only the organic matter. They are essentially oxidizing mechanisms without filtering action adequate for the removal of microorganisms. It is true that in the unfavorable environment of the septic tank and trickling filter, many sewage organisms do die out, but their elimination is incomplete and uncertain. If a nearly germ-free effluent is desired, as in cases where sewage works are situated upon estuaries where shellfish are cultivated, special means must be taken to remove bacteria. This may be done by chemical treatment, and the development of methods to

Digitized by Google

this end marks the newest step in the growing art of sewage disposal. Chemicals of various sorts were tested most elaborately as precipitants of sewage in the early seventies with poor results. As a purifying process, for the removal of organic matter, chemical treatment is of dubious expediency since the soluble constituents are imperfectly removed and the cost of the process, with its attendant necessity for sludge removal, is generally far greater than the expense of more adequate biological treatment. When organic stability has been attained, however, as in the effluents from rapid processes, chemical treatment may be used with marked success for the purpose of destroying bacteria. Experiments carried out by my colleague, Professor Phelps at the Technology Experiment Station, have demonstrated beyond doubt the cheapness and efficiency of chloride of lime for this particular purpose. Such doses of the chemical as are economically practicable do not destroy all germ life, but they do kill all ordinary sewage and pathogenic organisms, leaving only a few harmless spore formers. The process is not therefore sterilization, but it is disinfection. I am myself inclined to believe that this procedure may not only find application in the treatment of trickling and contact effluents, but in some cases may be used for crude sewage as well. Many towns turn their sewage into lakes or large streams competent to handle for a long time to come all the organic matter which may be discharged into them. In some such cases, the pathogenic germs present do constitute a menace to other communities or to the community chiefly concerned. Disinfection offers a promising method for securing at least temporary relief from such a difficulty.

The particular scheme of treatment to be adopted for any community can only be intelligently selected after a careful study of local conditions. Columbus, Ohio, is the first American city—the Lawrence station being, of course, a state institution—to approach the subject of sewage purification in a rational way. About three years ago the city called in Messrs. Hering and Fuller to investigate and report on the best method of sewage treatment, and appropriated nearly fifty thousand dollars for experimental work. A fine experiment station was equipped in which studies were made of over forty separate methods of disposal. The experts have finally reached the conclusion that the best treatment for Columbus sewage is by the use of the septic tank, followed by the trickling filter, and this again by sedimentation; and they are now proceeding with the construction of the largest plant of this type on our side of the water, including ten acres of trickling filters. Baltimore, Md., is now carrying out investigations of a still more extensive character, along generally similar lines.

The sewage experiment station of the Massachusetts Institute of Technology differs from any other similar testing station in the fact that its scope is wider than a particular local problem. Its purpose, in accord with the wishes of its anonymous founder are to advance the science of sewage disposal in both theoretical and practical aspects and to promote popular knowledge of the nature and importance of this important field of sanitary

Digitized by Google

work. The purely scientific chemical and bacteriological questions involved have naturally claimed a large sphere of our time. We have thought it wise, however, to investigate also the practical problem of the treatment of Boston sewage, now discharged unpurified into the harbor, but likely at some future day to require more careful handling. As at Columbus, the trickling filter seems to offer the best solution of the problem, preceded by septic treatment.

There are many problems still to be solved in the purification of sewage. The removal of suspended matter and its digestion in the septic tank, for example, urgently demand a careful study; yet the work of the last ten years in England and the United States has blocked out the main outlines of satisfactory sewage disposal practice. The engineer can to-day successfully meet any demand for the purification of domestic sewage; and this purification may be carried to any degree of perfection for which the community in question is prepared to pay. If you want a clear and sparkling effluent, highly purified bacterially, he can design you an intermittent filter for that purpose. If you merely want a stable effluent which may be discharged into a stream without creating a nuisance, he can build you a trickling filter. If you want, on the other hand, a disinfected but not organically purified effluent, that end, too, may be attained.

In closing, let me add that what Mr. Fuller said about water purification is equally true of sewage disposal—a badly constructed or badly operated system is worse than none at all, for it creates a false sense of security and blocks the path of true progress. When your community reaches the point when sewage disposal should be attempted, have your local situation studied and your plant carefully designed and place it under conscientious and intelligent supervision. A sewage disposal project so carried out will prove one of the soundest investments any community can make; for its dividends will be paid by the saving of human lives.

Digitized by Google

PURIFICATION OF WATER.

By Dr. G. F. B. Willard, Vergennes, Vt.

I am not a civil engineer, and all the knowledge I have upon the subject of purification of water has come from the fact that our town has been for the last thirty years, and even now some of the inhabitants are, drinking from a large sewer. I should say about one half of our population have reformed and are at the present time drinking pure water. The State Board of Health is after us, and we hope to have better conditions soon.

I have been extremely interested in the address to which we have listened. There is no longer any doubt but that either a sand filter or a mechanical filter if properly run will purify water, and the proper running—the careful management—is the particular point which I wish to emphasize. If you noticed, the gentleman who just preceded me emphasized that point. Any engineer will tell you that after you have installed a filter, the next thing is to have it properly conducted—have it watched. I have visited some filters, these wooden arrangements, and have asked how often they had the water analyzed. Some said once in two or three months. That is basing confidence on error; a filter thus managed is worse than none, it is a fraud and a delusion.

I went into a house the other day where a child was sick with typhoid fever. I said to the mother, "What are you drinking?" She said, "We are drinking the river water, but it is filtered." "Let me see your filter," said I. She showed me a little screw cap device attached to the faucet. Perfectly worthless. Do not put your trust in any little trinket. It does not pay you. There are some people who have become galvanized. You could n't kill them. My advice is do not install a thing because it is cheap. Your life, and the lives of the ones dear to you, depend upon it. Your children will take a disease quicker than you, therefore you should stop and consider their lives as well as your own.

There are various ways of purifying water. By the use of various chemicals you can purify a well for a little while, but clean it out or dig a new one. We attribute typhoid fever, more than any other disease, to the drinking water. If you are called to a family and they ask you how they can procure good safe drinking water, tell them to buy an extra tea kettle and boil their drinking water. For four years in Vergennes I managed that way and prevented sickness in my family, and I had five small children at the time. I cannot emphasize too strongly the futility of installing a cheap filter because some agent says it is a great thing. Our population is on the increase, and instead of twenty-five per square mile, our present population, it is estimated that we shall have one hundred and twenty-five by the end of this century. We did not have more than one or two cases of typhoid fever a year in Vergennes twenty years ago, but have had as high as

Digitized by Google

thirty-two or three in one year since the towns above us on the river are emptying their sewage into the stream. Once it was stated that water would purify itself by going eight to twelve miles in a stream. Now it is known that no river is long enough to insure the death of typhoid fever germs during its course. They seem to exist in some rivers at all times. Let a river be covered with ice, and a freshet come, and these germs will pass with the water.

In looking up the matter of filters, first came along an agent who would install a filter for $15,000, which would give us all the water we wanted. But this would depreciate about 8 per cent a year. In a small town like ours we found that a filter plant would take every cent to run it of the receipts from the water supplied, so we would have nothing to create a sinking fund with which to pay off our indebtedness. I will say, if you have to put in a filter, do not try to do it through an agent. Employ the best engineer you can find and act upon his advice. Then do not run it upon a political basis. Run it on the basis that you want to live as long as you can; that you want your children to grow up and be well and happy.

Dr. C. F. Ball, Rutland, Vt.

I would like to ask Professor Winslow regarding the probable effect in the direction of the head stream in enforcing the use of industrial wastes along the stream and the relative danger between house drainage and barnyard drainage. We have a stream coming down from the mountains and covered with farms for five, six or seven miles and after heavy rains we get surface contamination. We have a great many undesirable places, and if the experience in other places would show that the units would clear out the undesirable element, we might advocate such a movement.

Discussion by Dr. C. S. Caverly, Rutland, Vt.

It would be hard to imagine a subject that is of more value to the people of Vermont and to the health officers, and it would be hard to find a man who would be able to treat it as fully and intelligently as Professor Winslow has done this morning.

This is certainly one of the most enlightening addresses on the subject that I have had the pleasure of listening to. Professor Votey has also given us some very pertinent remarks.

There should not be a stream or brook in Vermont that would not be available for a safe water supply. Why are the ponds and lakes of Vermont allowed to be polluted? Instead of requiring us to be at the expense and trouble of obtaining a water supply by filtration, why can't we take our water from those nearest rivers, streams or ponds? Why are our upstreams and ponds allowed to pollute this stream or that stream to our damage? We cannot question that there is a great deal in that argument. We must assume that there is not a sewage system in Vermont of any kind

Digitized by Google

that is not discharging its effluent into the nearest pond or body of water of some kind. If a general rule was made and enforced to protect these ponds and streams, it would make an enormous expense and cause hardship. It is practically impractical. It is not feasible to protect all the ponds, streams, etc., at once. I think the State Board of Health will do all it is possible to do to prevent future pollution of these streams and ponds. There is one question in the local disposal of sewage which has caused me a little worry and thought; that is the matter of sedimentation taking place in the bed of the streams. How long is it before the sediment is going to become a positive nuisance the year round to the people in the neighborhood? There is a certain amount of self-purification with the help of bacteria and oxygen going on all the time. Otter Creek flows north from the southern part of Rutland County and empties into Lake Champlain just below Vergennes. There are three falls; one at Center Rutland, one at Proctor, and the other at Middlebury. There is a large amount of sewage going into that stream from approximately 25,000 people. There must be, and I know there is, where the stream is dammed for power purposes, an enormous amount of filth. There are no towns or communities on that stream except Vergennes, the lowest town down, and where the greatest damage is liable to occur. We have no example in Vermont to follow, but I think we will send for a sub-surface disposal or sewage plant. That ought to be a concrete example for small institutions. I feel sure that if such a system was once initiated, others would soon follow. Professor Votey hit the nail on the head when he said that the principal objection which has always been raised is the cost. Professor Winslow has shown us some practical methods which are probably practical for small communities and institutions. I would like to have him give us the approximate cost and the methods in detail, if he will.

Digitized by Google

PURE FOOD LAW.

NUMBER 143 OF THE ACTS OF 1904 AS AMENDED BY NUMBERS 144 OF THE ACTS OF 1904 AND 175, 176 AND 182 OF THE ACTS OF 1906.

No. 143.—An Act Providing for the Inspection of Food, Drugs and Other Articles in Common Use.

Section 1. Sale of adulterated articles prohibited.
Section 2. Terms "drug" and "food" defined.
Section 3. When drugs or food substances are deemed to be adulterated.
Section 4. Misbranding.
Section 5. Penalties.
Section 6. Sample for analysis.
Section 7. Examination of article.
Section 8. Penalty for obstructing health officer.
Section 9. Disposition of sample.
Section 10. Adulteration of liquor.
Section 12. Inspection of carcasses by health officers.
Section 13. Sale of unwholesome meat.
Section 14. Record of sales by druggists.
Section 15. Penalty.
Section 16. Not to apply to qualified practitioners of medicine.
Section 17. Sale of paper containing arsenic forbidden.
Section 18. Sale of adulterated candy.
Section 19. Regulations of state board.
Section 20. Penalty for violating act.
Section 21. Jurisdiction of courts.
Section 23. Prosecuting officers to be notified of violations of act.
Section 24. Permits issued by state board to manufacturers.
Section 25. Repeal of inconsistent acts.
Section 26. Takes effect from passage.

It is hereby enacted by the General Assembly of the State of Vermont:—

SECTION 1. No person shall sell, or offer for sale, any adulterated drug or substance to be used in the manner of medicine, or any adulterated article of food or substance to be used in the manner of food or drink, for man or domestic animals.

SEC. 2. The term "drug" as used in this act shall include all medicines and preparations recognized in the United States pharmacopœia or national formulary for internal or external use, and any substance or mixture of substances intended to be used for the cure, mitigation or prevention of disease of either man or beast. The term "food" as used herein shall include all articles whether simple, mixed or compound used for food, drink, confectionery, or condiments by man or beast.

Digitized by Google

SEC. 3. For the purposes of this act an article shall be deemed to be adulterated:—

In case of drugs:—

First. If, when a drug is sold under or by a name recognized in the United States pharmacopœia or national formulary, it differs from the standard of strength, quality or purity, as determined by the test laid down in the United States pharmacopœia or national formulary official at the time of investigation, provided that no drug defined in the United States pharmacopœia or national formulary shall be deemed to be adulterated under this provision if the standard of strength, quality or purity be plainly stated upon the bottle, box or other container thereof, although the standard may differ from that determined by the test laid down in the United States pharmacopœia or national formulary.

Second. If its strength or purity falls below the professed standard or quality under which it is sold.

In the case of confectionery:—

If it contain terra alba, barytes, talc, chrome yellow, or other mineral substance or poisonous color or flavor, or other ingredient deleterious or detrimental to health, or any vinous, malt or spirituous liquor or compound or narcotic drugs.

In the case of food:—

First. If any substance has been mixed and packed with it so as to reduce or lower or injuriously affect its quality or strength.

Second. If any substance has been substituted wholly or in part for the article.

Third. If any valuable constituent of the article has been wholly or in part abstracted.

Fourth. If it be mixed, colored, powdered, coated or stained in a manner whereby damage or inferiority is concealed.

Fifth. If it contain any added poisonous or other added deleterious ingredient which may render such article injurious to health; provided, that when in the preparation of food products for shipment they are preserved by any external application applied in such manner that the preservative is necessarily removed mechanically, or by maceration in water, or otherwise, and directions for the removal of said preservative shall be printed on the covering of the package, the provisions of this act shall be construed as applying only when said products are ready for consumption.

Sixth. If it consists in whole or in part of a filthy, decomposed or putrid animal or vegetable substance, or any portion of an animal unfit for food, whether manufactured or not, or if it is the product of a diseased animal, or one that has died otherwise than by slaughter.

SEC. 4. The term "misbranded," as used herein, shall apply to all drugs, or articles of food, or articles which enter into the composition of food, the package or label of which shall bear any statement, design or device regarding such article, or the ingredients or substances contained therein which

Digitized by Google

shall be false or misleading in any particular, and to any food or drug product which is falsely branded as to the state, territory or country in which it is manufactured or produced.

For the purposes of this act an article shall also be deemed to be misbranded:—

In case of drugs:—

First. If it be an imitation of or offered for sale under the name of another article.

Second. If the contents of the package as originally put up shall have been removed, in whole or in part, and other contents shall have been placed in such package, or if the package fail to bear a statement on the label of the quantity or proportion of any alcohol, morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate or acetanilide, or any derivative or preparation of any such substances contained therein.

In the case of food:—

First. If it be an imitation of or offered for sale under the distinctive name of another article.

Second. If it be labeled or branded so as to deceive or mislead the purchaser, or purport to be a foreign product when not so, or if the contents of the package as originally put up shall have been removed in whole or in part and other contents shall have been placed in such package, or if it fail to bear a statement on the label of the quantity or proportion of any morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate or acetanilide, or any derivative or preparation of any substances contained therein.

Third. If in package form, and the contents are stated in terms of weight or measure, they are not plainly and correctly stated on the outside of the package.

Fourth. If the package containing it or its label shall bear any statement, design or device regarding the ingredients or the substances contained therein, which statement, design or device shall be false or misleading in any particular; provided that an article of food which does not contain any added poisonous or deleterious ingredients shall not be deemed to be adulterated or misbranded in the following cases:—

First. In the case of mixtures or compounds which may be now or from time to time hereafter known as articles of food, under their own distinctive names, and not an imitation of or offered for sale under the distinctive name of another article, if the name be accompanied on the same label or brand with a statement of the place where said article has been manufactured or produced.

Second. In the case of articles labeled, branded or tagged so as to plainly indicate that they are compounds, imitations or blends, and the word "compound," "imitation," or "blend," as the case may be, is plainly stated on the package in which it is offered for sale; provided that the term "blend" as

Digitized by Google

used herein shall be construed to mean a mixture of like substances, not excluding harmless coloring or flavoring ingredients used for the purpose of coloring and flavoring only; and provided further, that nothing in this act shall be construed as requiring or compelling proprietors or manufacturers of proprietary foods which contain no unwholesome added ingredient to disclose their trade formulas, except in so far as the provisions of this act may require to secure freedom from adulteration or misbranding.

SEC. 5. Whoever fraudulently adulterates for the purpose of sale any article of food or drink, drug or medicine, or knowingly sells any fraudulently adulterated article of food or drink, drug or medicine, or any kind of diseased or unwholesome provisions as defined in this act, shall be imprisoned not exceeding one year, or fined not more than four hundred dollars.

SEC. 6. Every person offering or exposing for sale any drug or article of food within the meaning of this act, shall furnish to any member of the State Board of Health, or any local health officer, who shall apply to him for the same and tender him its value in money a sample sufficient for the purpose of the analysis of such drug or article of food.

SEC. 7. Any person who has reason to doubt the purity or genuineness of any article of food which he has purchased, may send at his own expense a sealed sample of it to the Laboratory of Hygiene of the State Board of Health for inspection. If upon examination the article appears to be adulterated, the board may obtain a certified sample of it, and should this sample prove to be adulterated, the board shall begin proceedings at once against the vendor.

SEC. 8. Whoever hinders, obstructs, or in any way interferes with any member of the State Board of Health or any local health officer in the performance of his duties under this act, shall be fined not more than fifty dollars for the first offense, and for each subsequent offense shall be fined one hundred dollars.

SEC. 9. Before commencing the analysis of a sample, the analyst shall reserve a portion, which shall be sealed; and in case of a complaint or indictment, part of the reserved portion of the sample alleged to be adulterated shall, upon application, be delivered to the defendant or his attorney, and part to the secretary of the State Board of Health.

SEC. 10. Whoever adulterates, for the purpose of sale, any liquor used or intended for drink, with cocculs indicus, vitrol, grains of paradise, opium, alum, capsicum, copperas, laurel water, logwood, Brazil wood, cochineal, sugar of lead, or any other substance which is poisonous or injurious to health, or knowingly sells any such liquor so adulterated, shall be imprisoned not exceeding one year, or be fined not more than one thousand dollars.

SEC. 11. (Sec. 10, No. 143, Acts of 1904.) Repealed by Sec. 5, No. 182, Acts of 1906.

Digitized by Google

SEC. 12. A health officer of a town may inspect the carcasses of slaughtered animals intended for food, and meat, fish, vegetables, produce, fruit or provisions found in his town, and for such purpose may enter any building, enclosure or other place in which such carcasses or articles are stored, kept or exposed for sale. If such carcasses or articles are designated for food for man and are found tainted, diseased, corrupted, decayed, unwholesome, or from any cause unfit for food, the local board of health shall seize the same and cause it to be forthwith destroyed or disposed of otherwise than for food. A member of the State Board of Health, or the director, chemist or assistant chemist at the State Laboratory of Hygiene, shall have the same powers as local health officers under the provisions of this section.

SEC. 13. Any meat, unwholesome provisions or articles sold, kept or offered for sale for food or drink for human beings, and any articles adulterated in violation of any of the preceding sections, shall be deemed a public nuisance and summarily destroyed.

SEC. 14. An apothecary, druggist or other person who sells arsenic, corrosive sublimate, nux vomica, chloroform, strychnine, morphine, opium, cocaine, carbolic acid or prussic acid, or its salts, shall, at the time of such sale, make a record of such sale in a book kept for that purpose, specifying the kind and quantity of the article sold, and the time when and the name of the person to whom such sale is made, which record shall be open to health officers, members of the State Board of Health and state officials who may wish to examine the same.

SEC. 15. If a person violates the provisions of the preceding section, he shall be fined not more than one hundred dollars.

SEC. 16. The two preceding sections shall not apply to legally qualified practitioners of medicine, nor to their prescriptions or recipes to their patients.

SEC. 17. Any corporation, person, firm or agent who shall sell or offer for sale or exchange any woven fabric or paper containing arsenic in any form, or any article of dress or of household use composed wholly or in part of such woven fabric or paper, or any other article of dress containing arsenic, shall, upon conviction thereof, be fined not exceeding one hundred dollars; provided, however, that this section shall not apply to dress goods or articles of dress containing not more than one-hundredth grain nor to other material containing not more than one-tenth grain of arsenic per square yard of the material.

SEC. 18. No person shall by himself, his servant or agent, or as the servant or agent of any other person or corporation, manufacture for sale, or knowingly sell or offer for sale, any candy adulterated by the admixture of terra alba, barytes, talc, or any other mineral substance, by poisonous colors or flavors or other ingredients, deleterious or detrimental to health, and the candy so adulterated shall be forfeited and destroyed under direction of the court.

Digitized by Google

SEC. 19. The State Board of Health shall, as soon as may be after this act takes effect, adopt such rules and regulations, not inconsistent with existing laws, as it deems necessary to facilitate the enforcement of the provisions of this act, and for the collecting and examining of drugs, foods, liquors, and candy, articles of clothing, fabrics, wall paper or anything containing poisonous pigments or substances whereby the health of any person may be injured. Said board shall cause said rules and regulations to be printed in pamphlet form for distribution, shall furnish to each local health officer a sufficient number of copies to supply the members of the local board of health and all practicing physicians in such town, and furnish to each town clerk a sufficient number of copies for distribution under the provisions of law as to the distribution of the acts and resolves of the general assembly; and it shall be the duty of said local health officers and town clerks to distribute the same. Any violation of any such rule or regulation made under the provisions of this act, after the publication and distribution of such rules and regulations, shall be punished by a fine of not more than five hundred dollars.

SEC. 20. If any person violates any of the provisions of this act, for which no penalty is hereinbefore provided, he shall be fined not more than one hundred dollars and not less than fifty dollars.

SEC. 21. Justices shall have concurrent jurisdiction with the county court of offenses under this act to the extent of fining the respondent fifty dollars, or may bind him over for trial by county court. It shall be the duty of the state's attorney to whom the State Board of Health shall report a violation of this act to cause proceedings to be commenced and prosecuted in the proper court without delay, for the enforcement of the penalties as in such case herein provided.

SEC. 22. (Sec. 21, No. 143, Acts of 1904.) Repealed by Sec. 4, No. 182, Acts of 1906.

SEC. 23. It is hereby made the duty of the State Board of Health, or agent thereof, to bring to the notice of the proper prosecuting officer any violation of any United States statute for preventing the adulteration or misbranding of food or drugs.

SEC. 24. Nothing contained in the preceding sections shall be so construed as to prevent the State Board of Health from issuing to a producer or manufacturer of foods or drinks a permit to use such preservatives or coloring matters as said board may determine by analysis or otherwise are not detrimental to health.

SEC. 25. All acts or parts of acts inconsistent with this act are hereby repealed.

SEC. 26. This act shall take effect from its passage.

Approved November 11, 1904.

Digitized by Google

No. 175, OF THE ACTS OF 1906.

An Act to Amend Section 11 of No. 143 of the Acts of 1904, Entitled "An Act Providing for the Inspection of Foods, Drugs and Other Articles in Common Use," Relating to the Powers of Health Officers and Making an Appropriation for the Inspection of Foods and Drugs.

It is hereby enacted by the General Assembly of the State of Vermont:—

SECTION 1. Section 11 of No. 143 of the Acts of 1904 is hereby amended so as to read as follows, viz.:—

SECTION 11. A health officer of a town may inspect the carcasses of slaughtered animals intended for food, and meat, fish, vegetables, produce, fruit or provisions found in his town, and for such purpose may enter any building, enclosure or other place in which such carcasses or articles are stored, kept or exposed for sale. If such carcasses or articles are designated for food for man and are found tainted, diseased, corrupted, decayed, unwholesome, or from any cause unfit for food, the local board of health shall seize the same and cause it to be forthwith destroyed or disposed of otherwise than for food. A member of the State Board of Health, or the director, chemist or assistant chemist at the State Laboratory of Hygiene, shall have the same powers as local health officers under the provisions of this section.

SEC. 2. The sum of twenty-five hundred dollars is hereby annually appropriated to be expended under the direction of the State Board of Health for paying the expenses incurred in carrying out and enforcing the provisions of No. 143 of the Acts of 1904, section four thousand three hundred forty-five and sections five thousand seventy-three to five thousand seventy-seven, inclusive, of the Vermont Statutes, and for providing for the inspection of foods and drugs.

Approved December 10, 1906.

NUMBER 182 OF THE ACTS OF 1906.

No. 182.—An Act to Prevent the Sale of Diseased Animals and Meat, and to Repeal Section 5074 of the Vermont Statutes, Sections 3, 6 and 8 of No. 85 of the Acts of 1902, and Sections 10 and 21 of No. 145 of The Acts of 1904.

It is hereby enacted by the General Assembly of the State of Vermont:—

SECTION 1. A person who sells or offers to sell or keeps with intent to sell for food purposes, or ships out of the state, or keeps with intent to ship out

Digitized by Google

of this state, for food purposes, the flesh of any animal or fowl which died or was killed when diseased, or the flesh of a calf which was less than four weeks old or weighed less than fifty pounds, dressed weight, when killed, shall be imprisoned not more than one year, or fined not more than three hundred dollars, or both. The possession of any such flesh dressed or packed in a manner suitable for sale or use as food shall be prima facie evidence of the intent to sell the same, or to ship the same out of the state, for use as food.

SEC. 2. A person who sells or offers to sell or keeps with intent to sell an animal known to him to be infected with bovine tuberculosis or any other contagious disease, or any disease dangerous to public health, shall be imprisoned not more than one year, or fined not more than three hundred dollars.

SEC. 3. A person who brings cattle or other domestic animals into this state, contrary to the provisions of the law relating to the importation of cattle and other domestic animals, shall be fined fifty dollars for each offense, and such importation of each separate animal shall constitute a distinct offense.

SEC. 4. Section 21 of No. 143 of the Acts of 1904 is hereby repealed.

SEC. 5. Section 5074 of the Vermont Statutes, sections 3, 6 and 8 of No. 85 of the Acts of 1902, and section 10 of No. 143 of the Acts of 1904, are hereby repealed except as to offenses committed or prosecutions commenced before this act takes effect, but as to such offenses and prosecutions such sections shall continue and remain in force.

SEC. 6. This act shall take effect from its passage.

Approved December 19, 1906.

RULES AND REGULATIONS FOR THE ENFORCEMENT OF THE PURE FOOD AND DRUG LAW.

Regulation I.

SHORT TITLE OF THE ACT.

No. 143 of the Laws of 1904 entitled "An act providing for the Inspection of Foods, Drugs, and other articles in common use" as amended by No. 144 of the Laws of 1904, No. 175, No. 176 and No. 182 of the Laws of 1906, shall be known and referred to as the Vermont Pure Food and Drug Law.

Regulation II.

ENFORCEMENT.

The enforcement of this law is made the duty of the State Board of Health. The State Board of Health, the director, chemist, and assistant

Digitized by Google

chemist of the Laboratory of Hygiene, and the health officers of the several towns and cities are food and drug inspectors.

Regulation III.

DUTY OF INSPECTORS.

It shall be the duty of the state health officers and food and drug inspectors:—

1. To collect samples of foods and drugs for examination and analysis.

2. To inspect dairies, creameries, cheese factories and other places where milk products are made and prepared.

3. To inspect stock yards, abattoirs and slaughter houses where animals are kept for slaughter, slaughtered and prepared for market.

4. To inspect canning factories, confectioners' factories, pickling factories, syrup refineries, bottling works, breweries, drug manufactories and other places where foods and drugs are made and prepared.

5. To inspect grocery stores, meat markets, fish markets, drug stores and all other places dealing in or selling food and drugs.

6. To inspect bakeries, bakeshops and other places where bread, cake, pastries, confections and similar products are prepared for sale.

7. To inspect restaurants, hotels and other public places where food is prepared and sold.

8. To assist local officials in the prosecution of violations of the Food and Drug Laws.

Inspectors shall conduct their examinations quietly and in such a manner that no unnecessary antagonism will be aroused against their work. They will remember always that it is the policy of the board of health to co-operate with manufacturers, wholesalers and retailers in securing pure goods.

Regulation IV.

COMPENSATION OF COLLECTORS.

When any local health officer is so requested by the secretary of the State Board of Health, he shall procure a sample of any drug, article of food, or other substance, specified in said act, and forward to the Laboratory of Hygiene, securely sealed. He shall also fill out the blank furnished by the State Board of Health for the purpose, and forward to the Laboratory, together with a statement of money paid out for such sample. For each single sample so sent, the local health officer shall receive the sum of twenty-five cents, for each additional sample the sum of ten cents, in addition to the sum he pays for the sample.*

*Attention is called to Section 7 of No. 143, relative to individuals sending samples.

Digitized by Google

Regulation V.

COLLECTION OF SAMPLES.

Samples may be purchased in the open market in the original, unbroken package, when possible, but if in bulk, the marks, brands or tags, upon the package, carton, container, wrapper or accompanying printed or written matter shall be noted.

The collector shall also note the names of the vendor, and agent through whom the sale was actually made, together with the date of purchase. The collector shall purchase representative samples.

A sample shall be delivered to the party from whom the purchase is made provided he requests it.

All samples shall be labelled with identifying marks and sealed by the collector with a seal provided for the purpose.

Regulation VI.

ORIGINAL UNBROKEN PACKAGE.

The term "original unbroken package" as used in these regulations is the original package, carton, case, can, box, barrel, bottle, phial, or other receptacle put up by the manufacturer, to which the label is attached, or which may be suitable for the attachment of a label, making one complete package of the food or drug article. The original package contemplated includes both wholesale and the retail package.

Regulation VII.

METHODS OF ANALYSIS.

Unless for some reason impracticable the methods of analysis employed shall be those prescribed by the Association of Official Agricultural Chemists.

Regulation VIII.

STANDARDS FOR DRUGS.

(Section 3.)

(a) A drug bearing a name recognized in the United States Pharmacopœia or National Formulary, without any further statement respecting its character, shall be required to conform in strength, quality, and purity to the standards prescribed or indicated for a drug of the same name recognized in the United States Pharmacopœia or National Formulary, official at the time.

(b) A drug bearing a name recognized in the United States Pharmacopœia or National Formulary, and branded to show a different standard of

Digitized by Google

strength, quality, or purity, shall not be regarded as adulterated if it conforms to its declared standard.

Regulation IX.

SUBSTANCES MIXED AND PACKED WITH FOODS.

(Section 3 under "Foods.")

No substance may be mixed or packed with a food product which will reduce or lower its quality or strength. Not excluded under this provision are substances properly used in the preparation of food products for clarification or refining, and eliminated in the further process of manufacture.

Regulation X.

COLORING, POWDERING, COATING, AND STAINING.

(Section 3, Paragraph 4, under "Foods.")

(a) Only harmless colors may be used in food products.

(b) The reduction of a substance to a powder to conceal inferiority in character is prohibited.

(c) The term "powdered" means the application of any powdered substance to the exterior portion of articles of food, or the reduction of a substance to a powder.

(d) The term "coated" means the application of any substance to the exterior portion of a food product.

(e) The term "stain" includes any change produced by the addition of any substance to the exterior portion of foods which in any way alters their natural tint.

Regulation XI.

NATURAL POISONOUS OR DELETERIOUS INGREDIENTS.

(Section 3, Paragraph 5, under "Foods.")

Any food product which contains naturally a poisonous or deleterious ingredient does not come within the provisions of the Vermont food and drugs act, except when the presence of such ingredients is due to filth, putrescence, or decomposition.

Regulation XII.

EXTERNAL APPLICATION OF PRESERVATIVES.

(Section 3, Paragraph 5, under "Foods," Proviso.)

(a) Poisonous or deleterious preservatives shall only be applied externally, and they and the food products shall be of a character which shall

Digitized by Google

not permit the permeation of any of the preservative to the interior, or any portion of the interior, of the product.

(b) When these products are ready for consumption, if any portion of the added preservative shall have penetrated the food product, then the proviso of section 3, paragraph 5, under "Foods," shall not obtain, and such food products shall then be subject to the regulations for food products in general.

(c) The preservative applied must be of such a character that until removed the food products are inedible.

Regulation XIII.

THE LABEL.

(Section 4.)

(a) The term "label" applies to any printed, pictorial, or other matter upon or attached to any package of a food or drug product, or any container thereof.

(b) The principal label shall consist, first, of all words which the Vermont food and drugs act, specifically requires, to wit, the name of the substance or product; the name of place of manufacture in the case of food compounds or mixtures; words which show that the articles are compounds, mixtures, or blends; the words "compound," "mixture," or "blend"; or words designating the substances or their derivatives and proportions required to be named in the case of drugs and foods. All these required words shall appear upon the principal label with no intervening descriptive or explanatory reading matter. Second, if the name of the manufacturer and place of manufacture are given, they shall also appear upon the principal label. Third, elsewhere upon the principal label other matter may appear in the discretion of the manufacturer.

(c) The principal label on foods or drugs for domestic commerce shall be printed in English (except as provided in Regulation XV.), with or without the foreign label in the language of the country where the food or drug product is produced or manufactured. The size of type shall not be smaller than 8-point (brevier) caps: *Provided,* that in case the size of the package will not permit the use of 8-point cap. type the size of the type may be reduced proportionately.

(d) The form, character, and appearance of the labels, except as provided above, are left to the judgment of the manufacturer.

(e) Descriptive matter upon the label shall be free from any statement, design, or device regarding the article or the ingredients or substances contained therein, or quality thereof, or place of origin, which is false or misleading in any particular.

(f) An article containing more than one food product or active medicinal agent is misbranded if named after a single constituent.

Digitized by Google

In the case of drugs the nomenclature employed by the United States Pharmacopœia and the National Formulary shall obtain.

(g) The term "design" or "device" applies to pictorial matter of every description and to abbreviations, characters, or signs for weights, measures, or names of substances.

(h) The use of any false or misleading statement, design, or device shall not be justified by any statement given as the opinion of an expert or other person, appearing on any part of the label, nor by any descriptive matter explaining the use of the false or misleading statement, design, or device.

Regulation XIV.

NAME AND ADDRESS OF MANUFACTURER.

(Section 4.)

(a) The name of the manufacturer or producer, or the place where manufactured, except in case of mixtures and compounds having a distinctive name, need not be given upon the label, but if given, must be the true name and the true place. The words "Packed for ————————," "distributed by ————————," or some equivalent phrase, shall be added to the label in case the name which appears upon the label is not that of the actual manufacturer or producer, or the name of the place not the actual place of manufacture or production.

(b) When a person, firm, or corporation actually manufactures or produces an article of food or drug in two or more places, the actual place of manufacture or production of each particular package need not be stated on the label except when the mention of any such place, to the exclusion of the others, misleads the public.

Regulation XV.

CHARACTER OF NAME.

(Section 4.)

(a) A simple or unmixed food or drug product not bearing a distinctive name shall be designated by its common name in the English language, or, if a drug, by any name recognized in the United States Pharmacopœia or National Formulary. No further description of its components or qualities is required, except as to contents of alcohol, morphine, etc.

(b) The use of a geographical name shall not be permitted in connection with a food or drug product not manufactured or produced in that place, when such name indicates that the article was manufactured or produced in that place.

(c) The use of a geographical name in connection with a food or drug

Digitized by Google

product will not be deemed a misbranding when by reason of long usage it has come to represent a generic term and is used to indicate a style, type, or brand; but in all such cases the state or territory where any such article is manufactured or produced shall be stated upon the principal label.

(d) A foreign name which is recognized as distinctive of a product of a foreign country shall not be used upon an article of domestic origin except as an indication of the type or style of quality or manufacture, and then only when so qualified that it cannot be offered for sale under the name of a foreign article.

Regulation XVI.

DISTINCTIVE NAME.

(Section 4.)

(a) A "distinctive name" is a trade, arbitrary, or fancy name which clearly distinguishes a food product, mixture, or compound from any other food product, mixture, or compound.

(b) A distinctive name shall not be one representing any single constituent of a mixture or compound.

(c) A distinctive name shall not misrepresent any property or quality of a mixture or compound.

(d) A distinctive name shall give no false indication of origin, character, or place of manufacture, nor lead the purchaser to suppose that it is any other food or drug product.

Regulation XVII.

COMPOUNDS, IMITATIONS, OR BLENDS WITHOUT DISTINCTIVE NAME.

(Section 4.)

(a) The term "blend" applies to a mixture of like substances, not excluding harmless coloring or flavoring ingredients used for the purpose of coloring and flavoring only.

(b) If any age is stated, it shall not be that of a single one of its constituents, but shall be the average of all constituents in their respective proportions.

(c) Coloring and flavoring cannot be used for increasing the weight or bulk of a blend.

(d) In order that colors or flavors may not increase the volume or weight of a blend, they are not to be used in quantities exceeding 1 pound to 800 pounds of the blend.

(e) A color or flavor cannot be employed to imitate any natural product or any other product of recognized name and quality.

Digitized by Google

(f) The term "imitation" applies to any mixture or compound which is a counterfeit or fraudulent simulation of any article of food or drug.

Regulation XVIII.

ARTICLES WITHOUT A LABEL.

(Section 4, Paragraph 1, under "Drugs"; Paragraph 1 under "Foods.")

It is prohibited to sell or offer for sale a food or drug product bearing no label upon the package or no descriptive matter whatever connected with it, either by design, device, or otherwise if said product be an imitation of or offered for sale under the name of another article.

Regulation XIX.

INCOMPLETENESS OF BRANDING.

A compound shall be deemed misbranded if the label be incomplete as to the names of the required ingredients. A simple product does not require any further statement than the name or distinctive name thereof, except as provided in Regulation XV. (a) and XXII.

Regulation XX.

SUBSTITUTION.

(Sections 3 and 4.)

(a) When a substance of a recognized quality commonly used in the preparation of a food or drug product is replaced by another substance not injurious or deleterious to health, the name of the substituted substance shall appear upon the label.

(b) When any substance which does not reduce, lower, or injuriously affect its quality or strength, is added to a food or drug product, other than that necessary to its manufacture or refining, the label shall bear a statement to that effect.

Regulation XXI.

WASTE MATERIALS.

(Section 4.)

When an article is made up of refuse material, fragments, or trimmings, the use of the name of the substance from which they are derived, unless accompanied by a statement to that effect, shall be deemed a misbranding. Packages of such materials may be labeled "pieces," "stems," "trimmings," or with some similar appellation.

Digitized by Google

Regulation XXII.

MIXTURES OR COMPOUNDS WITH DISTINCTIVE NAMES.

(Section 4, First Proviso under "Foods," Paragraph 1.)

(a) The terms "mixture" and "compounds" are interchangeable and indicate the results of putting together two or more food products.

(b) These mixtures or compounds shall not be imitations of other articles, whether simple, mixed, or compound, or offered for sale under the name of other articles. They shall bear a distinctive name and the name of the place where the mixture or compound has been manufactured or produced.

(c) If the name of the place be one which is found in different states, territories, or countries, the name of the state, territory, or country, as well as the name of the place, must be stated.

Regulation XXIII.

SUBSTANCES NAMED IN DRUGS OR FOODS.

(Section 4, Second Proviso, under "Drugs"; Second under "Foods.")

(a) The term "alcohol" is defined to mean common or ethyl alcohol. No other kind of alcohol is permissible in the manufacture of drugs except as specified in the United States Pharmacopœia or National Formulary.

(b) The words alcohol, morphine, opium, etc., and the quantities and proportions thereof, shall be printed in letters corresponding in size with those prescribed in Regulation XIII., paragraph (c).

(c) A drug, or food product except in respect of alcohol, is misbranded in case it fails to bear a statement on the label of the quantity or proportion of any alcohol, morphine, opium, heroin, cocaine, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate, or acetanilide, or any derivative or preparation of any such substances contained therein.

(d) A statement of the maximum quantity or proportion of any such substances present will meet the requirements, provided the maximum stated does not vary materially from the average quantity or proportion.

(e) In case the actual quantity or proportion is stated it shall be the average quantity or proportion with the variations noted in Regulation XXIV.

(f) The following are the principal derivatives and preparations made from the articles which are required to be named upon the label.

ALCOHOL ETHYL: *(Cologne spirits, Grain alcohol, Rectified spirits, Spirits, and Spirit of wine.)*

Derivatives—

Aldehyde, Ether, Ethyl acetate, Ethyl nitrite, and Paraldehyde.

Preparations containing alcohol—

Bitters, Brandies, Cordials, Elixirs, Essences, Fluid extracts, Spirits, Sirups, Tinctures, Tonics, Whiskies, and Wines.

Digitized by Google

MORPHINE, ALKALOID:

Derivatives—
Apomorphine, Dionine, Peronine, Morphine acetate, Hydrochloric, Sulphate, and other salts of morphine.

Preparations containing morphine or derivatives of morphine—
Bougies, Catarrh Snuff, Chlorodyne, Compound powder of morphine, Crayons, Elixirs, Granules, Pills, Solutions, Sirups, Suppossitories, Tablets, Triturates, and Troches.

OPIUM, GUM—

Preparations of Opium—
Extracts, Denarcotized opium, Granulated opium, and Powdered opium, Bougies, Brown mixture, Carminative mixtures, Crayons, Dover's powders, Elixirs, Liniments, Ointments, Paregoric, Pills, Plasters, Sirups, Suppositories, Tablets, Tinctures, Troches, Vinegars, and Wines.

Derivatives—
Codeine, Alkaloid, Hydrochloride, Phosphate, Sulphate, and other salts of codeine.

Preparations containing codeine or its salts—
Elixirs, Pills, Sirups, and Tablets.

COCAINE, ALKALOID:

Derivatives—
Cocaine hydrochloride, Oleate, and other salts.

Preparations containing cocaine or salts of cocaine—
Coca leaves, Catarrh powders, Elixirs, Extracts, Infusion of coca, Ointments, Paste pencils, Pills, Solutions, Sirups, Tablets, Tinctures, Troches, and Wines.

HEROIN:

Preparations containing heroin—
Sirups, Elixirs, Pills, and Tablets.

ALPHA AND BETA EUCAINE:

Preparations—
Mixtures, Ointments, Powders, and Solutions.

CHLOROFORM:

Preparations containing chloroform—
Chloranodyne, Elixirs, Emulsions, Liniments, Mixtures, Spirits, and Sirups.

CANNABIS INDICA:

Preparations of Cannabis indica—
Corn remedies, Extracts, Mixtures, Pills, Powders, Tablets, and Tinctures.

CHLORAL HYDRATE *(Chloral, U. S. Pharmacopœia, 1890):*

Derivatives—
Chloral acetophenonoxim, Chloral alcoholate, Chloralamide, Chloralimide, Chloral orthoform, Chloralose, Dormoil, Hypnal, and Uraline.

Digitized by Google

Preparations containing chloral hydrate or its derivatives—

Chloral camphorate, Elixirs, Liniments, Mixtures, Ointments, Suppositories, Sirups, and Tablets.

ACETANILIDE *(Antifebrine, Phenylacetamide):*

Derivatives—

Acetphenetidine, Citrophen Diacetanilide, Lactophenin, Methoxyacetanlide, Methylacetanilide, Para-Iodoacetanilide and Phenacetine.

Preparations containing acetanilide or derivatives—

Analgesics, Antineuralgics, Antirheumatics, Cachets, Capsules, Cold remedies, Elixirs, Granular effervescing salts, Headache powders, Mixtures, Pain remedies, Pills, and Tablets.

Regulation XXIV.

WEIGHTS AND MEASURES.

(Section 4.)

(a) A statement of the weight or measure of the food contained in a package is not required. If any such statement is printed, it shall be a plain and correct statement of the average net weight or volume, either on or immediately above or below the principal label, and of the size of letters specified in Regulation XIII.

(b) A reasonable variation from the stated weight for individual packages is permissible, provided this variation is as often above as below the weight or volume stated. This variation shall be determined by the inspector from the changes in the humidity of the atmosphere, from the exposure of the package to evaporation or to absorption of water, and the reasonable variations which attend the filling and weighing or measuring of a package.

Regulation XXV.

METHOD OF STATING QUANTITY OR PROPORTION.

(Section 4.)

In the case of alcohol the expression "quantity" or "proportion" shall mean the average percentage by volume in the finished product. In the case of the other ingredients required to be named upon the label, the expression "quantity" or "proportion" shall mean grains or minims per ounce or fluid ounce, and also, if desired, the metric equivalents therefor, or miligrams per gram or per cubic centimeter, or grams or cubic centimeters per kilogram or per liter; provided that these articles shall not be deemed misbranded if the examination of quantity or proportion be stated, as required in Regulation XXIII. (d).

Digitized by Google

FOOD STANDARDS.

I. Animal Products.

A. MEATS AND THE PRINCIPAL MEAT PRODUCTS.

a. Meats.

1. *Meat, flesh,* is any clean, sound, dressed, and properly prepared edible part of animals in good health at the time of slaughter, and if it bears a name descriptive of its kind, composition, or origin, it corresponds thereto. The term "animals," as herein used, includes not only mammals, but fish, fowl, crusteceans, mollusks, and all other animals used as food.

2. *Fresh meat* is meat from animals recently slaughtered and properly cooled until delivered to the consumer.

3. *Cold storage meat* is meat from animals recently slaughtered and preserved by refrigeration until delivered to the consumer.

4. *Salted, pickled,* and *smoked meats* are unmixed meats preserved by salt, sugar, vinegar, spices, or smoke, singly or in combination, whether in bulk or in suitable containers.

b. Manufactured Meats.

1. *Manufactured meats* are meats not included in paragraphs 2, 3, and 4, whether simple or mixed, whole or comminuted, in bulk or in suitable containers,* with or without the addition of salt, sugar, vinegar, spices, smoke, oils, or rendered fat. If they bear names descriptive of kind, composition, or origin, they correspond thereto and when bearing such descriptive names, if force or flavoring meats are used, the kind and quantity thereof are made known.

c. Lard.

1. Lard is the rendered fresh fat from hogs in good health at the time of slaughter, is clean, free from rancidity, and contains necessarily incorporated in the process of rendering, not more than one (1) per cent of substances, other than fatty acids and fat.

2. *Leaf lard* is lard rendered at moderately high temperatures from the internal fat of the abdomen of the hog, excluding that inherent to the intestines, and has an iodin number not greater than sixty (60).

3. *Neutral lard* is lard rendered at low temperatures.

B. MILK AND ITS PRODUCTS.

a. Milks.

1 *Milk* is the fresh, clean, lacteal secretion obtained by the complete milking of one or more healthy cows, properly fed and kept, excluding that

*Suitable containers for keeping moist food products such as sirups, honey, condensed milk, soups, meat extracts, meats, manufactured meats, and undried fruit and vegetables, and wrappers in contact with food products, contain on their surfaces, in contact with the food product, no lead, antimony, arsenic, zinc or copper, or any compounds thereof or any other poisonous or injurious substance. If the containers are made of tin plate they are outside-soldered and the plate in no place contains less than one hundred and thirteen (113) milligrams of tin on a piece five (5) centimeters square or one and eight tenths (1.8) grains on a piece two (2) inches square.

The inner coating of the containers is free from pin holes, blisters, and cracks.

If the tin plate is lacquered, the lacquer completely covers the tinned surface within the container and yields to the contents of the container no lead, antimony, arsenic, zinc, or copper or any compounds thereof, or any other poisonous or injurious substance.

Digitized by Google

obtained within fifteen days before and ten days after calving, and contains not less than eight and one-half (8.5) per cent of solids not fat, and not less than three and one-quarter (3.25) per cent of milk fat.

2. *Blended milk* is milk modified in its composition so as to have a definite and stated percentage of one or more of its constituents.

3. *Skim milk* is milk from which a part or all of the cream has been removed and contains not less than nine and one-quarter (9.25) per cent of milk solids.

4. *Pasteurized milk* is milk that has been heated below boiling but sufficiently to kill most of the active organisms present and immediately cooled to fifty degrees Farenheit or lower.

5. *Sterilized milk* is milk that has been heated at the temperature of boiling water or higher for a length of time sufficient to kill all organisms present.

6. *Condensed milk, evaporated milk,* is milk from which a considerable portion of water has been evaporated and contains not less than twenty-eight (28) per cent of milk solids of which not less than twenty-seven and five-tenths (27.5) per cent is milk fat.

7. *Sweetened condensed milk* is milk from which a considerable portion of water has been evaporated and to which sugar (sucrose) has been added, and contains not less than twenty-eight (28) per cent of milk solids, of which not less than twenty-seven and five-tenths (27.5) per cent is milk fat.

8. *Condensed skim milk* is skim milk from which a considerable portion of water has been evaporated.

9. *Buttermilk* is the product that remains when butter is removed from milk or cream in the process of churning.

10. *Goat's milk, ewe's milk, et cetera,* are the fresh, clean, lacteal secretions, free from colostrum, obtained by the complete milking of healthy animals other than cows, properly fed and kept, and conform in name to the species of animals from which they are obtained.

b. Cream.

1. *Cream* is that portion of milk, rich in milk fat, which rises to the surface of milk on standing, or is separated from it by centrifugal force, is fresh and clean and contains not less than eighteen (18) per cent of milk fat.

2. *Evaporated cream, clotted cream,* is cream from which a considerable portion of water has been evaporated.

c. Milk Fat or Butter Fat.

1. *Milk fat, butter fat,* is the fat of milk and has a Reichert-Meissl number not less than twenty-four (24) and a specific gravity not less than $0.905 \left(\frac{40°C}{40°C}\right)$.

d. Butter.

1. *Butter* is the clean, non-rancid product made by gathering in any manner the fat of fresh or ripened milk or cream into a mass, which also contains a small portion of the other milk constituents, with or without salt, and contains not less than eighty-two and five-tenths (82.5) per cent of milk fat. Butter may also contain added coloring matter of a harmless nature.

2. *Renovated butter, process butter,* is the produce made by melting

Digitized by Google

butter and reworking, without the addition of use of chemicals or any substances except milk, cream, or salt, and contains not more than sixteen (16) per cent of water and at least eighty-two and five-tenths (82.5) per cent of milk fat.

e. Cheese.

1. *Cheese* is the sound, solid, and ripened product made from milk or cream by coagulating the casein thereof with rennet or lactic acid, with or without the addittion of ripening ferments and seasoning, and contains, in the water-free substance, not less than fifty (50) per cent of milk fat. Cheese may also contain added coloring matter of a harmless nature.
2. *Skim milk cheese* is the sound, solid, and ripened product, made from skim milk by coagulating the casein thereof with rennet or lactic acid, with or without the addition of ripening ferments and seasoning.
3. *Goat's milk cheese, ewe's milk cheese, et cetera,* are the sound, ripened products made from the milks of the animals specified, by coagulating the casein thereof with rennet or lactic acid, with or without the addition of ripening ferments and seasoning.

f. Ice Cream.

1. *Ice cream* is a frozen product made from cream and sugar, with or without pure gelatine and a natural flavoring, and contains not less than fourteen (14) per cent of milk fat.
2. *Fruit ice cream* is a frozen product made from cream, sugar, and sound, clean, mature fruits, with or without pure gelatine and contains not less than twelve (12) per cent of milk fat.
3. *Nut ice cream* is a frozen product made from cream, sugar, and sound, nonrancid nuts, with or without pure gelatine and contains not less than twelve (12) per cent of milk fat.

g. Miscellaneous Milk Products.

1. *Whey* is the product remaining after the removal of fat and casein from milk in the process of cheesemaking.
2. *Kumiss* is the product made by the alcoholic fermentation of mare's or cow's milk.

II. Vegetable Products.

A. GRAIN PRODUCTS.

a. Grains and Meals.

1. *Grain* is the fully matured, clean, sound, air-dry seed of wheat, maize, rice, oats, rye, buckwheat, barley, sorgum, millet, or spelt.
2. *Meal* is the clean, sound product made by grinding grain.
3. *Flour* is the fine, clean, sound product made by bolting wheat meal and contains not more than thirteen and one-half (13.5) per cent of moisture, not less than one and twenty-five hundredths (1.25) per cent of nitrogen, not more than one (1) per cent of ash and not more than fifty-hundredths (0.50) per cent of fibre.
4. *Graham flour* is unbolted wheat meal.
5. *Gluten flour* is the clean, sound product made from flour by the removal of starch and contains not less than five and six-tenths (5.6) per cent of nitrogen and not more than ten (10) per cent of moisture.

Digitized by Google

6. *Maize meal, corn meal, Indian corn meal,* is meal made from sound maize grain and contains not more than fourteen (14) per cent of moisture, not less than one and twelve hundredths (1.12) per cent of nitrogen, and not more than one and six tenths (1.6) per cent of ash.

7. *Rice* is the hulled, or hulled and polished grain of *Oryza sativa.*

8. *Oatmeal* is meal made from hulled oats and contains not more than twelve (12) per cent of moisture, not more than one and five-tenths (1.5) per cent of crude fiber, not less than two and twenty-four hundredths (2.24) per cent of nitrogen, and not more than two and two-tenths (2.2) per cent of ash.

9. *Rye flour* is the fine, clean, sound product made by bolting rye meal and contains not more than thirteen and one-half (13.5) per cent of moisture, not less than one and thirty-six hundredths (1.36) per cent of nitrogen, and not more than one and twenty-five hundredths (1.25) per cent ash.

10. *Buckwheat flour* is bolted buckwheat meal and contains not more than twelve (12) per cent of mosture not less than one and twenty-eight hundredths (1.28) per cent of nitrogen, and not more than one and seventy-five hundredths (1.75) per cent of ash.

B. FRUIT AND VEGETABLES.

a. Fruit and Fruit Products.

(Except fruit juices, fresh, sweet, and fermented, and vinegars.)

1. *Fruits* are the clean, sound, edible, fleshy fructifications of plants, distinguished by their sweet, acid, and ethereal flavors.

2. *Dried fruit* is the clean, sound product made by drying mature, properly prepared, fresh fruit, in such a way as to take up no harmful substance, and conforms in name to the fruit used in its preparation; *sun-dried fruit* is dried fruit made by drying without the use of artificial means; *evaporated fruit* is dried fruit made by drying with the use of artificial means.

3. *Evaporated apples* are evaporated fruit made from peeled and cored apples and contain not more than twenty-seven (27) per cent of moisture determined by the usual commercial method of drying for four (4) hours at the temperature of boiling water.

4. *Canned fruit* is the sound product made by sterilizing clean, sound, properly matured and prepared fresh fruit, by heating, with or without sugar (sucrose) and spices, and keeping in suitable, clean, hermetically sealed containers and conforms in name to the fruit used in its preparation.

5. *Preserve* is the sound product made from clean, sound, properly matured and prepared fresh fruit and sugar (sucrose) sirup, with or without spices or vinegar and conforms in name to that of the fruit used, and in its preparation not less than forty-five pounds (45) of fruit are used to each fifty-five (55) pounds of sugar.

6. *Honey preserve* is preserve in which honey is used in place of sugar (sucrose) sirup.

7. *Glucose preserve* is preserve in which a glucose product is used in place of sugar (sucrose) sirup.

8. *Jam, marmalade,* is the sound product made from clean, sound, properly matured and prepared fresh fruit and sugar (sucrose), with or without spices or vinegar, by boiling to a pulpy or semisolid consistence, and conforms in name to the fruit used, and in its preparation not less than forty-five (45) pounds of fruit are used to each fifty-five (55) pounds of sugar.

9. *Glucose jam, glucose marmalade,* is jam in which a glucose product is used in place of sugar (sucrose).

Digitized by Google

10. *Fruit butter* is the sound product made from fruit juice and clean, sound, properly matured and prepared fruit, evaporated to a semi-solid mass of homogeneous consistence, with or without the addition of sugar and spices or vinegar, and conforms in name to the fruit used in its preparation.

11. *Glucose fruit butter,* is fruit butter in which a glucose product is used in place of sugar (sucrose).

12. *Jelly* is the sound, semi-solid, gelatinous product made by boiling clean, sound, properly matured and prepared fresh fruit with water, concentrating the expressed and strained juice, to which sugar (sucrose) is added, and conforms in name to the fruit used in its preparation.

13. *Glucose jelly* is jelly in which a glucose product is used in place of sugar (sucrose).

b. Vegetables and Vegetable Products.

1. *Vegetables* are the succulent, clean, sound, edible parts of herbaceous plants used for culinary purposes.

2. *Dried vegetables* are the clean, sound products made by drying properly matured and prepared vegetables in such a way as to take up no harmful substance, and conform in name to the vegetables used in their preparation; *sun-dried vegetables* are dried vegetables made by drying without the use of artificial means; *evaporated vegetables* are dried vegetables made by drying with the use of artificial means.

3. *Canned vegetables* are sound, properly matured and prepared fresh vegetables, with or without salt, sterilized by heat, with or without previous cooking in vessels from which they take up no metallic substance, kept in suitable clean, hermetically sealed containers, are sound and conform in name to the vegetables used in their preparation.

4. *Pickles* are clean, sound, immature cucumbers, properly prepared, without taking up any metallic compound other than salt, and preserved in any kind of vinegar, with or without spices; *pickled onions, pickled beets, pickled beans,* and other pickled vegetables are vegetables prepared as described above, and conform in name to the vegetables used.

5. *Salt pickles* are clean, sound, immature cucumbers, preserved in a solution of common salt, with or without spices.

6. *Sweet pickles* are pickled cucumbers or other vegetables in the preparation of which sugar (sucrose) is used.

7. *Sauerkraut* is clean, sound, properly prepared cabbage, mixed with salt, and subjected to fermentation.

8. *Catchup, (ketchup, catsup)* is the clean, sound product made from the properly prepared pulp of clean, sound, fresh, ripe tomatoes, with spices and with or without sugar and vinegar; *mushroom catchup, walnut catchup, et cetera,* are catchups made as above described, and conform in name to the substances used in their preparation.

C. SUGARS AND RELATED SUBSTANCES.

a. Sugar and Sugar Products.

SUGARS.

1. *Sugar* is the product chemically known as sucrose (saccharose) chiefly obtained from sugar cane, sugar beets, sorghum, maple, and palm.

2. *Granulated, loaf, cut, milled,* and *powdered sugars* are different forms of sugar and contain at least ninety-nine and five tenths (99.5) per cent of sucrose.

3. *Maple sugar* is the solid product resulting from the evaporation of

Digitized by Google

maple sap, and contains, in the waterfree substance, not less than sixty-five one-hundredths (0.65) per cent of maple sugar ash.

4. *Massecuite, melada, mush sugar,* and *concrete* are products made by evaporating the purified juice of a sugar-producing plant, or a solution of sugar, to a soild or semi-solid consistence, and in which the sugar chiefly exists in a crystalline state.

MOLASSES AND REFINERS' SIRUP.

1. *Molasses* is the product left after separating the sugar from massecuite, melada, mush sugar, or concrete, and contains not more than twenty-five (25) per cent of water and not more than five (5) per cent of ash.

2. *Refiners' sirup, treacle,* is the residual liquid product obtained in the process of refining raw sugars and contains not more than twenty-five (25) per cent of water and not more than eight (8) per cent of ash.

SIRUPS.

1. *Sirup* is the sound product made by purifying and evaporating the juice of a sugar-producing plant without removing any of the sugar.

2. *Sugar-cane sirup* is sirup made by the evaporation of the juice of the sugar-cane or by the solution of sugar-cane concrete, and contains not more than thirty (30) per cent of water and not more than two and five tenths (2.5) per cent of ash.

3. *Sorghum sirup* is sirup made by the evaporation of sorghum juice or by the solution of sorghum concrete, and contains not more than thirty (30) per cent of water and not more than two and five tenths (2.5) per cent of ash.

4. *Maple sirup* is sirup made by the evaporation of maple sap or by the solution of maple concrete, and contains not more than thirty-two (32) per cent of water and not less than forty-five hundredths (0.45) per cent of maple sirup ash.

5. *Sugar sirup* is the product made by dissolving sugar to the consistence of a sirup and contains not more than thirty-five (35) per cent of water.

b. Glucose Products.

1. *Starch sugar* is the solid product made by hydrolyzing starch or a starch-containing substance until the greater part of the starch is converted into dextrose. Starch sugar appears in commerce in two forms, anhydrous starch sugar and hydrous starch sugar. The former, crystallized without water or crystallization, contains not less than ninety-five (95) per cent of dextrose and not more than eight-tenths (0.8) per cent of ash. The latter, crystallized with the water of crystallization, is of two varieties—70 sugar, also known as brewers' sugar, contains not less than seventy (70) per cent of dextrose and not more than eight tenths (0.8) per cent of ash; 80 sugar climax or acme sugar, contains not less than eighty (80) per cent of dextrose and not more than one and one-half (1.5) per cent of ash.

The ash of all these products consists almost entirely of chlorides and sulphates.

2. *Glucose, mixing glucose, confectioner's glucose,* is a thick, sirupy, colorless product made by incompletely hydrolizing starch, or a starch-containing substance, and decolorizing and evaporating the product. It varies in density from forty-one (41) to forty-five (45) degrees Baume at a temperature of 100 degrees Farenheit (37.7° C.), and conforms in density, within these limits, to the degrees Baume it is claimed to show, and for a density of forty-one (41) degrees Baume contains not more than twenty-one

Digitized by Google

(21) per cent and for a density of forty-five (45) degrees not more than fourteen (14) per cent of water. It contains on a basis of fonty-one (41) degrees Baume not more than one (1) per cent of ash, consisting chiefly of chlorides and sulphates.

c. Candy.

1. *Candy* is a product made from a saccharine substance or substances with or without the addition of harmless coloring, flavoring, or filling materials and contains no terra alba, barytes, talc, chrome yellow, or other mineral substances, or poisonous colors or flavors, or other ingredients deleterious or detrimental to health, or any vinous, malt, or spirituous liquor or compound, or narcotic drug.

d. Honey.

1. *Honey* is the nectar and saccharine exudations of plants gathered, modified, and stored in the comb by honey bees *(Apis melifica and A. dorsata;)* is lævorotatory, contains not more than twenty-five (25) per cent of water, not more than twenty-five hundredths (0.25) per cent of ash, and not more than eight (8) per cent of sucrose.
2. *Comb honey* is honey contained in the cells of comb.
3. *Extracted honey* is honey which has been separated from the uncrushed comb by centrifugal force or gravity.
4. *Strained honey* is honey removed from the crushed comb by straining or other means.

D. CONDIMENTS EXCEPT VINEGAR AND SALT.

a. Spices.

1. *Spices* are aromatic vegetable substances used for seasoning food and from which no portion of any volatile oil or other flavoring principle has been removed and which are clean, sound, and true to name.
2. *Allspice, pimento,* is the dried fruit of the *Pimenta pimenta* (L.) Karst., and contains not less than eight (8) per cent of quercitannic acid*; not more than six (6) per cent of total ash, not more than five tenths (0.5) per cent of ash insoluble in hydrochloric acid, and not more than twenty-five (25) per cent of crude fiber.
3. *Anise* is the fruit of the *Pimpinella anisum* L.
4. *Bay leaf* is the dried leaf of *Laurus noblis* L.
5. *Capers* are the flower buds of *Capparis spinosa* L.
6. *Caraway* is the fruit of *Carum carvi* L.

CAYENNE AND RED PEPPERS.

7. *Red pepper* is the red, dried, ripe fruit of any species of *Capsicum.*
8. *Cayenne pepper, cayenne,* is the dried ripe fruit of *Capsicum frutescens* L., *Capsicum baccatum* L., or some other small-fruited species of *Capsicum,* and contains not less than fifteen (15) per cent of nonvolatile ether extract; not more than six and five tenths (6.5) per cent of total ash; not more than five tenths (0.5) per cent of ash insoluble in hydrochloric acid; not more than one and five tenths (1.5) per cent of starch, and not more than twenty-eight (28) per cent of crude fiber.
9. *Paprika* is the dried ripe fruit of *Capsicum annuum* L., or some other large-fruited species of *Capsicum,* excluding seeds and stems.
10. *Celery seed* is the dried fruit of *Apium graveolens* L.

*Calculated from the total oxygen absorbed by the aqueous extract.

Digitized by Google

11. *Cinnamon* is the dried bark of any species of the genus *Cinnamomum* from which the outer layers may or may not have been removed.

12. *True cinnamon* is the dried inner bark of *Cinnamomum zeylanicum* Breyne.

13. *Cassia* is the dried bark of various species of *Cinnamomum,* other than *Cinnamomum zeylanicum,* from which the outer layers may or may not have been removed.

14. *Cassia buds* are the dried immature fruit of species of *Cinnamomum.*

15. *Ground cinnamon, ground cassia,* is a powder consisting of *cinnamon,* cassia, or cassia buds, or a mixture of these spices, and contains not more than six (6) per cent of total ash and not more than two (2) per cent of sand.

16. *Cloves* are the dried flower buds of *Caryophyllus aromaticus* L., which contain not more than five (5) per cent of clove stems; not less than ten (10) per cent of volatile ether extract; not less than twelve (12) per cent of quercitannic acid*; not more than eight (8) per cent of total ash; not more than five tenths (0.5) per cent of ash insoluble in hydrochloric acid, and not more than ten (10) per cent of crude fiber.

17. *Coriander* is the dried fruit of *Coriandrum sativum* L.

18. *Cumin seed* is the fruit of *Cuminum cyminum* L.

19. *Dill seed* is the fruit of *Anethum graveolens* L.

20. *Fennel* is the fruit of *Foeniculum foeniculum* (L.) Karst.

21. *Ginger* is the washed and dried or decorticated and dried rhizome of *Zinziber zingiber* (L.) Karst., and contains not less than forty-two (42) per cent of starch; not more than eight (8) per cent of crude fiber, not more than six (6) per cent of total ash, not more than one (1) per cent of lime, and not more than three (3) per cent of ash insoluble in hydrochloric acid.

22. *Limed ginger, bleached ginger,* is whole ginger coated with carbonate of lime and contains not more than ten (10) per cent of ash, not more than four (4) per cent of carbonate of lime, and conforms in other respects to the standard for ginger.

23. *Horse-radish is the root of Roripa armoracia* (L.) Hitchcock, either by itself, or ground and mixed with vinegar.

24. *Mace* is the dried arillus of *Myristica fragrans* Houttuyn, and contains not less than twenty (20) nor more than thirty (30) per cent of non-volatile ether extract, not more than three (3) per cent of total ash, and not more than five-tenths (0.5) per cent of ash insoluble in hydrochloric acid and not more than ten (10) per cent of crude fiber.

25. *Macassar mace, Papua mace,* is the dried arillus of *Myristica argentea* Warb.

26. *Bombay mace* is the dried arillus of *Myristica malabarica* Lamarck.

27. *Marjoram* is the leaf, flower and branch of *Majaorana majorana* (L.) Karst.

28. *Mustard seed* is the seed of *Sinapis alba* L. (white mustard), *Brassica nigra* (L.) *Koch* (black mustard), or *Brassica juncea* (L.) Cosson (black or brown mustard).

29. *Ground mustard* is a powder made from mustard seed, with or without the removal of the hulls and a portion of the fixed oil, and contains not more than two and five tenths (2.5) per cent of starch and not more than eight (8) per cent of total ash.

30. *Prepared mustard, German mustard, French mustard, mustard paste,* is a paste composed of a mixture of ground mustard seed or mustard flour with salt, spices and vinegar, and, calculated free from water, fat and salt, contains not more than twenty-four (24) per cent of carbohydrates, cal-

*Calculated from the total oxygen absorbed by the aqueous extract.

Digitized by Google

culated as starch, determined according to the official methods, not more than twelve (12) per cent of crude fiber nor less than thirty-five (35) per cent of protein, derived solely from the materials named.

31. *Nutmeg* is the dried seed of the *Myristica fragrans* Houttuyn, deprived of its testa, with or without a thin coating of lime, and contains not less than twenty-five (25) per cent of nonvolatile ether extract, not more than five (5) per cent of total ash, not more than five tenths (0.5) per cent of ash insoluble in hydrochloric acid, and not more than ten (10) per cent of crude fiber.

32. *Macassar nutmeg, Papua nutmeg, male nutmeg, long nutmeg,* is the dried seed of *Myristica argentea* Warb. deprived of its testa.

PEPPER.

33. *Black pepper* is the dried immature berry of *Piper nigrum* L. and contains not less than six (6) per cent of nonvolatile ether extract, not less than twenty-five (25) per cent of starch, not more than seven (7) per cent of total ash, not more than two (2) per cent of ash insoluble in hydrochloric acid ,and not more than fifteen (15) per cent crude fiber. One hundred parts of the nonvolatile ether extract contain not less than three and one quarter (3.25) parts of nitrogen. *Ground black pepper* is the product made by grinding the entire berry and contains the several parts of the berry in their normal proportions.

34. *Long pepper* is the dried fruit of *Piper longum* L.

35. *White pepper* is the dried mature berry of *Piper nigrum* L. from which the outer coating or the outer and inner coatings have been removed and contains not less than six (6) per cent of nonvolatile ether extract, not less than fifty (50) per cent of starch, not more than four (4) per cent of total ash, not more than five tenths (0.5) per cent of ash insoluble in hydrochloric acid, and not more than five (5) per cent of crude fiber. One hundred parts of the nonvolatile ether extract contain not less than four (4) parts of nitrogen.

36. *Saffron* is the dried stigma of *Crocus sativus* L.

37. *Sage* is the leaf of *Salvia officinalis* L.

38. *Savory, summer savory,* is the leaf, blossom, and branch of *Satureja hortensis* L.

39. *Thyme* is the leaf and tip of blooming branches of *Thymus vulgaris* L.

b. Flavoring Extracts.

1. *A flavoring extract** is a solution in ethyl alcohol of proper strength of the sapid and odorous principles derived from an aromatic plant, or parts of the plant, with or without its coloring matter, and conforms in name to the plant used in its preparation.

2. *Almond extract* is the flavoring extract prepared from oil of bitter almonds, free from hydrocyanic acid, and contains not less than one (1) per cent by volume of oil of bitter almonds.

2a. *Oil of bitter almonds,* commercial, is the volatile oil obtained from the seed of the bitter almond (*Amygdalus communis* L.), the apricot (*Prunus armeniaca* L.), or the peach (*Amygdalus persica* L.).

3. *Anise extract* is the flavoring extract prepared from oil of anise, and contains not less than three (3) per cent by volume of oil of anise.

3a. *Oil of anise* is the volatile oil obtained from the anise seed.

4. *Celery seed extract* is the flavoring extract prepared from celery seed

*The flavoring extracts herein described are intended solely for food purposes and are not to be confounded with similar preparations described in the Pharmacopœia for medicinal purposes.

Digitized by Google

or the oil of celery seed, or both, and contains not less than three-tenths (0.3) per cent by volume of oil of celery seed.

4a. *Oil of celery seed* is the volatile oil obtained from celery seed.

5. *Cassia extract* is the flavoring extract prepared from oil of cassia and contains not less than two (2) per cent by volume of oil of cassia.

5a. *Oil of cassia* is the lead-free volatile oil obtained from the leaves or bark of *Cinnamomum cassia* Bl., and contains not less than seventy-five (75) per cent by weight of cinnamic aldehyde.

6. *Cinnamon extract* is the flavoring extract prepared from oil of cinnamon, and contains not less than two (2) per cent by volume of oil of cinnamon.

6a. *Oil of cinnamon* is the lead-free volatile oil obtained from the bark of the Ceylon cinnamon (*Cinnamomum zeylanicum* Breyne), and contains not less than sixty-five (65) per cent by weight of cinnamic aldehyde and not more than ten (10) per cent by weight of eugenol.

7. *Clove extract* is the flavoring extract prepared from oil of cloves, and contains not less than two (2) per cent by volume of oil of cloves.

7a. *Oil of cloves* is the lead-free, volatile oil obtained from cloves.

8. *Ginger extract* is the flavoring extract prepared from ginger, and contains in each one hundred (100) cubic centimeters the alcohol-soluble matters from not less than twenty (20) grams of ginger.

9. *Lemon extract* is the flavoring extract prepared from oil of lemon, or from lemon peel, or both, and contains not less than five (5) per cent by volume of oil of lemon.

9a. *Oil of lemon* is the volatile oil obtained, by expression or alcoholic solution, from the fresh peel of the lemon (*Citrus limonum* L.), has an optical rotation (25° C.) of not less than + 60° in a 100-millimeter tube, and contains not less than four (4) per cent by weight of citral.

10. *Terpeneless extract of lemon* is the flavoring extract prepared by shaking oil of lemon with dilute alcohol, or by dissolving terpeneless oil of lemon in dilute alcohol, and contains not less than two tenths (0.2) per cent by weight of citral derived from oil of lemon.

10a. *Terpeneless oil of lemon* is oil of lemon from which all or nearly all of the terpenes have been removed.

11. *Nutmeg extract* is the flavoring extract prepared from oil of nutmeg, and contains not less than two (2) per cent by volume of oil of nutmeg.

11a. *Oil of nutmeg* is the volatile oil obtained from nutmegs.

12. *Orange extract* is the flavoring extract prepared from oil of orange, or from orange peel, or both, and contains not less than five (5) per cent by volume of oil of orange.

12a. *Oil of orange* is the volatile oil obtained, by expression or alcoholic solution, from the fresh peel of the orange (*Citrus aurantium* L.) and has an optical rotation (25° C.) of not less than + 95° in a 100-millimeter tube.

13. *Terpeneless extract of orange* is the flavoring extract prepared by shaking oil of orange with dilute alcohol, or by dissolving terpeneless oil of orange in dilute alcohol, and corresponds in flavoring strength to orange extract.

13a. *Terpeneless oil* of orange is oil of orange from which all or nearly all of the terpenes have been removed.

14. *Peppermint extract* is the flavoring extract prepared from oil of peppermint, or from peppermint, or both, and contains not less than three (3) per cent by volume of oil of peppermint.

14a. *Peppermint* is the leaves and flowering tops of *Mentha piperita* L.

14b. *Oil of peppermint* is the volatile oil obtained from peppermint and contains not less than fifty (50) per cent by weight of menthol.

Digitized by Google

15. *Rose extract* is the flavoring extract prepared from otto of roses, with or without red rose petals, and contains not less than four-tenths (0.4) per cent by volume of otto of roses.

15*a*. *Otto of roses* is the volatile oil obtained from the petals of *Rosa damascena* Mill., *R. centifolia* L., or *R. moschata* Herrm.

16. *Savory extract* is the flavoring extracts prepared from oil of savory, or from savory, or both, and contains not less than thirty-five hundredths (0.35) per cent by volume of oil of savory.

16*a*. *Oil of savory* is the volatile oil obtained from savory.

17. *Spearmint extract* is the flavoring extract prepared from oil of spearmint, or from spearmint, or both and contains not less than three (3) per cent by volume of oil of spearmint.

17*a*. *Spearmint* is the leaves and flowering tops of *Mentha spicata* L.

17*b*. *Oil of spearmint* is the volatile oil obtained from spearmint.

18. *Star anise extract* is the flavoring extract prepared from oil of star anise, and contains not less than three (3) per cent by volume of oil of star anise.

18*a*. *Oil of star anise* is the volatile oil distilled from the fruit of the star anise (*Illicium verum* Hook.).

19. *Sweet basil extract* is the flavoring extract prepared from oil of sweet basil, or from sweet basil, or both, and contains not less than one tenth (0.1) per cent by volume of oil of sweet basil.

19*a*. *Sweet basil, basil,* is the leaves and tops of *Ocymum basilicum* L.

19*b*. *Oil of sweet basil* is the volatile oil obtained from basil.

20. *Sweet marjoram extract, marjoram extract* is the flavoring extract prepared from the oil of marjoram, or from marjoram, or both, and contains not less than one (1) per cent by volume of oil of marjoram.

20*a*. *Oil of marjoram* is the volatile oil obtained from marjoram.

21. *Thyme extract* is the flavoring extract prepared from oil of thyme, or from thyme, or both, and contains not less than two tenths (0.2) per cent by volume of oil of thyme.

21*a*. *Oil of thyme* is the volatile oil obtained from thyme.

22. *Tonka extract* is the flavoring extract prepared from tonka bean, with or without sugar or glycerine, and contains not less than one-tenth (0.1) per cent by weight of coumarin extracted from the tonka bean, together with a corresponding proportion of the other soluble matters thereof.

22*a*. *Tonka bean* is the seed of *Coumarouna odorata* Aublet (*Dipteryx odorata* (Aubl.) Willd.).

23. *Vanilla extract* is the flavoring extract prepared from vanilla bean, with or without sugar or glycerin, and contains in one hundred (100) cubic centimeters the soluble matters from not less than ten (10) grams of the vanilla bean.

23*a*. *Vanilla bean* is the dried, cured fruit of *Vanilla planifolia* Andrews.

24. *Wintergreen extract* is the flavoring extract prepared from oil of wintergreen, and contains not less than three (3) per cent by volume of oil of wintergreen.

24*a*. *Oil of wintergreen* is the volatile oil distilled from the leaves of the *Gaultheria procumbens* L.

c. Edible Vegetable Oils and Fats.

1. *Olive oil* is the oil obtained from the sound, mature fruit of the cultivated olive tree (*Olea europoea* L.) and subjected to the usual refining processes; is free from rancidity; has a refractive index (25° C.) not less than one and forty-six hundred and sixty ten-thousandths (1.4660) and not exceeding one and forty-six hundred and eighty ten-thousandths (1.4680);

Digitized by Google

and an iodin number not less than seventy-nine (79) and not exceeding ninety (90).

2. *Virgin olive oil* is olive oil obtained from the first pressing of carefully selected, hand-picked olives.

3. *Cotton-seed oil* is the oil obtained from the seeds of cotton plants (*Gossypium hirsutum* L., *G. barbadense* L., or *G. herbaceum* L.) and subjected to the usual refining processes; is free from rancidity; has a refractive index (25° C) not less than one and forty-seven hundred ten-thousandths (1.4700) and not exceeding one and forty-seven hundred and twenty-five ten-thousandths (1,4725); and an iodin number not less than one hundred and four (104) and not exceeding one hundred and ten (110).

4. *"Winter-yellow" cotton-seed oil* is expressed cotton-seed oil from which a portion of the stearin has been separated by chilling and pressure, and has an iodin number not less than one hundred and ten (110) and not exceeding one hundred and sixteen (116).

5. *Peanut oil, arachis oil, earthnut oil,* is the oil obtained from the peanut (*Arachis hypogae* L.) and subjected to the usual refining processes; is free from rancidity; has a refractive index (25° C.) not less than one and forty-six hundred and ninety ten-thousandths (1.4690) and not exceeding one and forty-seven hundred and seven ten-thousandths (1.4707); and an iodin number not less than eighty-seven (87) and not exceeding one hundred (100).

6. *"Cold-drawn" peanut oil* is peanut oil obtained by pressure without heating.

7. *Sesame oil, gingili oil, teel oil,* is the oil obtained from the seeds of the sesame plants (*Sesamum orientale* L. and *S. radiatum* Schum and Thonn.) and subjected to the usual refining processes; is free from rancidity; has a refractive index (25° C.) not less than one and forty-seven hundred and four ten-thousandths (1.4704) and not exceeding one and forty-seven hundred and seventeen ten-thousandths (1.4717); and an iodin number not less than one hundred and three (103) and not exceeding one hundred and twelve (112).

8. *"Cold-drawn" sesame oil* is sesame oil obtained by pressure without heating.

9. *Poppy-seed oil* is the oil obtained from the seed of the poppy (*Papaver somniferum* L.) subjected to the usual refining processes and free from rancidity.

10. *White poppy-seed oil, "cold-drawn" poppy-seed oil,* is poppy-seed oil of the first pressing without heating.

11. *Cocoanut oil* is the oil obtained from the kernels of the cocoanut (*Cocos nucifera* L.) and subjected to the usual refining processes and free from rancidity.

12. *Cochin oil* is cocoanut oil prepared in Cochin (Malabar).

13. *Ceylon oil* is cocoanut oil prepared in Ceylon.

14. *Copra oil* is cocoanut oil prepared from copra, the dried kernels of the cocoanut.

15. *Rape-seed oil, colza oil,* is the oil obtained from the seeds of the rape plant (*Brassica napus* L.) and subjected to the usual refining processes and free from rancidity.

16. *"Cold-drawn" rape-seed oil* is rape-seed oil obtained by the first pressing without heating.

17. *Sunflower oil* is the oil obtained from the seeds of the sunflower (*Helianthus annuus* L.) and subjected to the usual refining processes and free from rancidity.

18. *"Cold-drawn" sunflower oil* is sunflower oil obtained by the first pressing without heating.

Digitized by Google

19. *Maize oil, corn oil,* is the oil obtained from the germ of the maize (*Zea mays* L.) and subjected to the usual refining processes and free from rancidity.

20. *Cocoa butter, cacao butter,* is the fat obtained from roasted, sound cocoa beans, and subjected to the usual refining processes; is free from rancidity; has a refractive index (40° C.) not less than one and forty-five hundred and sixty-six ten-thousandths (1.4566) and not exceeding one and forty-five hundred and ninety-eight ten-thousandths (1.4598), an iodin number not less than thirty-three (33) and not exceeding thirty-eight (38); and a melting point not lower than 30° C. nor higher than 35° C.

21. *Cotton-seed oil stearin* is the solid product made by chilling cotton-seed oil and separating the solid portion by filtration, with or without pressure, and having an iodin number not less than eighty-five (85) and not more than one hundred (100).

E. TEA, COFFEE, AND COCOA PRODUCTS.

a. Tea.

1. *Tea* is the leaves and leaf buds of different species of *Thea,* prepared by the usual trade processes of fermenting, drying, and firing; conforms in variety and place of production to the name it bears; and contains not less than four (4) nor more than seven (7) per cent of ash.

b. Coffee.

1. *Coffee* is the seed of *Coffea arabica* L. or *Coffea liberica* Bull., freed from all but a small portion of its spermoderm, and conforms in variety and place of production to the name it bears.

2. *Roasted coffee* is coffee which by the action of heat has become brown and developed its characteristic aroma, and contains not less than ten (10) per cent of fat and not less than three (3) per cent of ash.

c. Cocoa and Cocoa Products.

1. *Cocoa beans* are the seeds of the cacao tree, *Theobroma cacao* L.

2. *Cocoa nibs, cracked cocoa,* is the roasted, broken cocoa bean freed from its shell or husk.

3. *Chocolate, plain chocolate, bitter chocolate, chocolate liquor, bitter chocolate coatings,* is the solid or plastic mass obtained by grinding cocoa nibs without the removal of fat or other constituents except the germ, and contains not more than three (3) per cent of ash insoluble in water, three and fifty hundredths (3.50) per cent of crude fiber, and nine (9) per cent of starch, and not less than forty-five (45) per cent of cocoa fat.

4. *Sweet chocolate, sweet chocolate coatings,* is chocolate mixed with sugar (sucrose), with or without the addition of cocoa butter, spices, or other flavoring materials, and contains in the sugar- and fat-free residue no higher percentage of either ash, fiber, or starch than is found in the sugar- and fat-free residue of chocolate.

5. *Cocoa, powdered cocoa,* is cocoa nibs, with or without the germ, deprived of a portion of its fat and finely pulverized, and contains percentages of ash, crude fiber, and starch corresponding to those in chocolate after correction for fat removed.

6. *Sweet cocoa, sweetened cocoa,* is cocoa mixed with sugar (sucrose), and contains not more than sixty (60) per cent of sugar (sucrose),

Digitized by Google

and in the sugar- and fat-free residue no higher percentage of either ash, crude fiber, or starch than is found in the sugar- and fat-free residue of chocolate.

F. BEVERAGES.

a. Fruit Juices—Fresh, Sweet, and Fermented.

FERMENTED FRUIT JUICES.

1. *Wine* is the product made by the normal alcoholic fermentation of the juice of sound, ripe grapes, and the usual cellar treatment, and contains not less than seven (7) nor more than sixteen (16) per cent of alcohol, by volume, and, in one hundred (100) cubic centimeters (20° C.), not more than one-tenth (0.1) gram of sodium chlorid nor more than two-tenths (0.2) gram of potassium sulphate; and for red wine not more than fourteen-hundredths (0.14) gram, and for white wine not more than twelve hundredths (0.12) gram of volatile acids produced by fermentation and calculated as acetic acid. *Red wine* is wine containing the red coloring matter of the skins of grapes. *White wine* is wine made from white grapes or the expressed fresh juice of other grapes.

2. *Dry wine* is wine in which the fermentation of the sugars is practically complete and which contains, in one hundred (100) cubic centimeters (20° C.) less than one (1) gram of sugars and for dry red wine not less than sixteen-hundredths (0.16) gram of grape ash and not less than one and six-tenths (1.6) grams of sugar-free grape solids, and for dry white wine not less than thirteen-hundredths (0.13) gram of grape ash and not less than one and four-tenths (1.4) grams of sugar-free grape solids.

3. *Fortified dry wine* is dry wine to which brandy has been added but which conforms in all other particulars to the standard of dry wine.

4. *Sweet wine* is wine in which the alcoholic fermentation has been arrested, and which contains, in one hundred (100) cubic centimeters (20° C.), not less than one (1) gram of sugars, and for sweet red wine not less than sixteen-hundredths (0.16) gram of grape ash, and for sweet white wine not less than thirteen-hundredths (0.13) gram of grape ash.

5. *Fortified sweet wine* is sweet wine to which wine spirits have been added. The wine spirits is the product resulting from the distillation of fermented grape juice to which water may have been added prior to, during, or after fermentation, for the sole purpose of facilitating the fermentation and economical distillation thereof, and is held to include the products from grapes or their residues, commonly known as grape brandy. Pure sweet wine is fermented grape juice only, and shall contain no other substance whatever introduced before, at the time of, or after fermentation, except as expressly provided below; and such sweet wine shall contain not less than four per centum of saccharine matter, which saccharine strength may be determined by testing with Baling's saccharometer or must scale, such sweet wine, after the evaporation of the spirits contained therein, and restoring the sample tested to original volume by addition of water: *Provided,* That the addition of pure boiled or condensed grape must or pure crystallized cane or beet sugar or pure anhydrous sugar to the pure grape juice aforesaid, or the fermented product of such grape juice prior to the fortification for the sole purpose of perfecting sweet wine according to commercial standard, or the addition of water in such quantities only as may be necessary in the mechanical operation of grape conveyors, crushers, and pipes leading to fermenting tanks, shall not be excluded by the definition of pure sweet wine aforesaid: *Provided, however,* That the cane or beet sugar, or

Digitized by Google

pure anhydrous sugar, or water, so used shall not in either case be in excess of ten (10) per centum of the weight of the wine to be fortified.

6. *Sparkling wine* is wine in which the after part of the fermentation is completed in the bottle, the sediment being disgorged and its place supplied by wine or sugar liquor, and which contains, in one hundred (100) cubic centimeters (20° C.), not less than twelve-hundredths (0.12) gram of grape ash.

7. *Modified wine, ameliorated wine, corrected wine,* is the product made by the alcoholic fermentation, with the usual cellar treatment, of a mixture of the juice of sound, ripe grapes with sugar (sucrose), or a sirup containing not less than sixty-five (65) per cent of sugar (sucrose), and in quantity not more than enough to raise the alcoholic strength after fermentation, to eleven (11) per cent by volume.

8. *Raisin wine* is the product made by the alcoholic fermentation of an infusion of dried or evaporated grapes, or of a mixture of such infusion or of raisins with grape juice.

G. VINEGAR.

1. *Vinegar, cider vinegar, apple vinegar,* is the product made by the alcoholic and subsequent acetous fermentations of the juice of apples, is lævo-rotatory, and contains not less than four (4) grams of acetic acid, not less than one and six-tenths (1.6) grams of apple solids, of which not more than fifty (50) per cent are reducing sugars, and not less than twenty-five-hundredths (0.25) gram of apple ash in one hundred (100) cubic centimeters (20° C.); and the water-soluble ash from one hundred (100) cubic centimeters (20° C.) of the vinegar contains not less than ten (10) milligrams of phosphoric acid ($P_2 O_5$), and requires not less than thirty (30) cubic centimeters of decinormal acid to neutralize its alkalinity.

2. *Wine vinegar, grape vinegar,* is the product made by the alcoholic and subsequent acetous fermentations of the juice of grapes and contains, in one hundred (100) cubic centimeters (20° C.), not less than four (4) grams of acetic acid, not less than one (1.0) gram of grape solids, and not less than thirteen-hundredths (0.13) gram of grape ash.

3. *Malt vinegar* is the product made by the alcoholic and subsequent acetous fermentations, without distillation, of an infusion of barley malt or cereals whose starch has been converted by malt, is dextro-rotatory and contains, in one hundred (100) cubic centimeters (20° C.), not less than four (4) grams of acetic acid, not less than two (2) grams of solids, and not less than two-tenths (0.2) gram of ash; and the water-soluble ash from one hundred (100) cubic centimeters (20° C.) of the vinegar contains not less than nine (9) milligrams of phosphoric acid $P_2 O_5$), and requires not less than four (4) cubic centimeters of decinormal acid to neutralize its alkalinity.

4. *Sugar vinegar* is the product made by the alcoholic and subsequent acetous fermentations of solutions of sugar, sirup, molasses, or refiners' sirup, and contains, in one hundred (100) cubic centimeters (20° C.), not less than four (4) grams of acetic acid.

5. *Glucose vinegar* is the product made by the alcoholic and subsequent acetous fermentations of solutions of starch sugar or glucose, is dextro-rotatory, and contains, in one hundred (100) cubic centimeters (20° C.), not less than four (4) grams of acetic acid.

6. *Spirit vinegar, distilled vinegar, grain vinegar,* is the product made by the acetous fermentation of dilute distilled alcohol, and contains, in one

Digitized by Google

hundred (100) cubic centimeters (20° C.), not less than four (4) grams of acetic acid.

III. Salt.

1. *Table salt, dairy salt,* is fine-grained crystalline salt containing on a water-free basis not more than one and four-tenths (1.4) per cent of calcium sulphate ($CaSO_4$), nor more than five-tenths (0.5) per cent of calcium and magnesium chloride ($CaCl_2$ and $MgCl_2$), nor more than one-tenth (0.1) per cent of matters insoluble in water.

IV. Baking Powders.

Baking powders must consist only of wholesome materials, the names of which shall be stated on the label, and shall give at least ten (10) per cent of their own weight of carbonic acid gas on addition of water.

Any one desiring copies of the Pure Food Law may apply to the secretary, Brattleboro, Vt.

Digitized by Google

MILK STANDARDS AT THE STATE LABORATORY.

MILK BELOW STANDARD EXAMINED FROM MAY 10 TO AUGUST 10, 1907

Lab. No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Micro-scopical	Remarks
48859	5-12-07	L. C. Hall.....	Island Pond.	13.55	9.15	4.4	Normal	Dirty
48861	5-14-07	Geo. B. Hubbard...	Jericho.....	12.93	8.83	4.1	"	"
48878	"	Hugh Teachout....	Essex	12.07	8.18	3.9	"	Low in solids not fat
48879	"	W. R. Place.....	"	12.95	8.75	4.2	"	Dirty
48892	"	J. E. Brown.....	Middlebury.	12.14	8.54	3.6	"	"
48974	5-20-07	R. F. Powers.....	Clarendon ..	13.30	8.30	5.0	"	"
48975	"	F. H. Button.....	" ..	13.00	8.90	4.1	"	"
48978	"	E. C. Bryant.....	Manchester.	12.34	8.94	3.4	"	"
49093	5-29-07	Baker & Tupper....	Burlington..	12.22	8.92	3.3	"	Submitted. Dirty
49065	"	J. B. Ritchie.....	" ..	12 44	8.64	3.8	"	" "
49101	5-31-07	Chas. T. Reed	Manchester Center.....	12.19	8.39	3 9	"	Submitted. Low in solids not fat
49686	6-25-07	Albert Ray.....	Wilmington	13.40	8.80	4.6	"	Dirty
49687	"	Samuel Pike.....	"	14.64	9.54	5.1	"	"
49688	"	Albert Buell.....	"	12.93	8.83	4.1	"	"
49689	"	F. O. Jackson.....	St. Albans...	14.02	9.02	5.0	"	"
49690	"	H. C. Blake.....	"	13.78	8.98	4 8	"	"
49671	"	R. J. Bruce.....	Proctor.....	12.57	8.77	3.8	"	"
49672	"	E. Myatt.....	"	12.20	8.50	3.9	"	"
49675	"	J. A. Blanchard.....	"	11.12	8.12	3.0	"	Low in solids and fat
49676	"	R. J. Bruce.....	"	11.62	8.82	2.8	"	Low in total solids and fat. Dirty
49677	"	S. R. Adams.....	"	13.20	8.50	4.7	"	Dirty
49678	"	Ed. Myatt.....	"	12.16	8.36	3.8	"	Low in solids not fat. Dirty
49887	7- 6-07	C. K. Tyler.....	Burlington..	13.30	8.90	4.4	"	Dirty
49897	"	Wm. Place.....	Essex Junct.	11.38	8.78	2.6	"	Low in total solids and fat
49903	"	— Dickinson.....	"	12.32	8.52	3.8	"	Dirty
50042	7-12-07	O. E. Barber.....	Burlington..	12.45	8.75	3.7	"	Bacteria 384.000 per c. c.
50046	"	A. N. Houle.....	" ..	12.69	8.89	3.8	"	Bacteria 135 000 per c. c. Dirty
50047	"	E. J. Veins	" ..	12.69	8.89	3.8	"	Bacteria 282,000 per c. c.
50049	"	S. E. Chase	" ..	11.73	8.73	3.0	"	Bacteria 18,800 per c. c.
.....	.....	.....	.....	.....	.....	.....	.....	Dirty Low in total solids and fat
50050	"	F. X. Bordo.....	" ..	13.16	8.66	4.5	"	Bacteria 81,2 0 per c. c. Dirtv
50052	"	Mrs. F. Saltus.....	" ..	12.32	8.52	3.8	"	Bacteria 324,0.0 per c. c. Dirty
50056	"	E. O Reynolds.....	" ..	12.44	8.64	3.8	"	Bacteria 105,900 per c. c. Dirty
50059	"	J. E Maynard.....	" ..	13.05	8.85	4.2	"	Bacteria 129,600 per c. c.
50062	"	Baker & Tupper....	" ..	12.80	8.60	4.2	"	Bacteria 104,000 per c. c.
50141	"	Lavaller & Provost.	" ..	12.45	8.75	3.7	"	Bacteria 120,000 per c. c. Dirty
50142	"	Moses Perleman....	" ..	12.20	8.50	3.7	"	Bacteria 144,000 per c. c. Dirty

Digitized by Google

MILK ABOVE STANDARD EXAMINED FROM MAY 10 TO AUGUST 10, 1907

Lab. No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Micro-scopical	Remarks
48876	5-14-07	—— Corey	Essex	12.57	8.77	3.8	Normal	
48877	"	—— Norton	"	12.44	8.64	3.8	"	
48942	5-18-07	Z. Campbell	St. Albans	13.31	9.11	4.2	"	
49843	"	H. C. Blake	"	13.67	9.27	4.4	"	
48944	"	F. O. Jackson	"	14.40	9.40	5.0	"	
48945	"	J. N. Warner	"	12.57	8.77	3.8	"	
48946	"	W. Clark	"	13.32	9.32	4.0	"	
48947	"	E. H. Brooks	"	13.90	9.10	4.8	"	
49004	5-20-07	E. J. Viens	Burlington	12.82	9.02	3.8	"	Submitted
49005	"	"	"	13.31	9.17	4.2	"	"
49011	"	C. K. Tyler	"	13.90	9.10	4.8	"	"
49062	5-29-07	J. B. Ritchie	"	13.05	8.85	4.2	"	"
49094	"	Baker & Tupper	"	12.32	8.52	3.8	"	"
49115	5-31-07	J. D. Brewster	Windsor	12.21	8.71	3.5	"	"
49157	"	L. H. Buck	Burlington	13.55	9.15	4.4	"	"
49159	"	O. E. Barber	"	13.32	9.32	4.0	"	"
49192	6- 1-07	"	"	13.05	8.85	4.2	"	"
49193	"	"	"	12.80	8.60	4.2	"	"
49181	"	O. W. & S. M. Bishop	Springfield	14.25	8.85	5.4	"	"
49182	"	F. C. Murdick	"	12.22	8.92	3.3	"	"
49212	6- 3-07	R. S. Barstow	Burlington	13.05	8.85	4.2	"	"
49213	"	J. S. Benham	Milton			29.7	"	" Cream
49426	6-13-07	R. S. Barstow	Burlington	12.90	8.50	4.4	"	"
49427	"	Baker & Tupper	"	12.69	8.89	3.8	"	"
49428	"	"	"	13.66	8.96	4.7	"	"
49430	"	C. K. Tyler	"	13.05	8.85	4.2	"	"
49433	"	C. L. Greene	"	13.04	8.74	4.3	"	"
49691	6-25-07	W. S. Clark	St. Albans	13.05	8.85	4.2	"	
49692	"	J. Campbell	"	13.54	8.94	4.6	"	
49673	"	Wm Mead	Proctor	13.65	9.15	4.5	"	
49674	"	B Hier	"	12.92	8.62	4.3	"	
49923	7- 6-07	B. L. Kent	Burlington			35.1	"	Submitted. Cream
50041	7-12-07	Thos. Ryan	"	13.16	8.66	4.5	"	Bacteria 64,800 per c. c.
50043	"	Mrs. J. B. Ritchie	"	13.17	8.97	4.2	"	" 18,000 per c. c.
50044	"	H. H. Wheeler	"	13.17	8.97	4.2	"	" 14,400 per c. c.
50045	"	James Downing	"	13.16	8.66	4.5	"	" 62,000 per c. c.
50048	"	Dennis Bourne	"	13.54	9.04	4.5	"	" 47,600 per c. c.
50051	"	Wm. Suckstorff	"	12.93	8.83	4.1	"	" 16,200 per c. c.
50053	"	Mrs. F. S. Collins	"	12.44	8.54	3.9	"	" 20,000 per c. c.
50054	"	C. C. Bliss	"	12.68	8.58	4.1	"	" 12,000 per c. c.
50055	"	H. B. Chittenden & Son	"	12.80	8.60	4.2	"	" 30,000 per c. c.
50057	"	Sterle & Butler	"	12.92	8.72	4.2	"	" 12,400 per c. c.
50058	"	H. A. Bixby	"	13.40	8.80	4.6	"	" 10,000 per c. c.
50060	"	A. N. & I. H. Buck	"	12.92	8.62	4.3	"	" 13,600 per c. c.
50061	"	C. K. Tyler	"	12.82	9.02	3.8	"	" 12,800 per c. c.
50078	"	W. E. Hays	"	13.28	8.68	4.6	"	Submitted
50115	"	D. J. Millham & Son	"	13.85	9.05	3.8	"	Bacteria 29,600 per c. c.
50001	"	Michael Collins	"	13.17	8.97	4.2	"	Submitted
50379	7-21-07	H. H. Wheeler	"			20.7	"	Cream. Submitted
50516	8- 1-07	Collins Farm	"	12.51	8.51	4.0	"	
50520	"	—— Spaulding	Bellows Falls	12.82	9.02	3.8	"	
50545	"	J. N. Warner	St. Albans	12.09	8.69	3.4	"	
50546	"	R. A. Warner	"	13.18	8.88	4.3	"	
50547	"	W. S. Clark	"	12.57	8.77	3.8	"	
50548	"	F. O Jackson	"	12.51	8.51	4.0	"	

Digitized by Google

BULLETIN OF THE

VERMONT STATE BOARD OF HEALTH.

Volume VIII. No. 1.

Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 70, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

Town Clerks are reminded that all vital statistics for the first six months should have been sent to the office of the secretary of the State Board of Health not later than the month of August.

An Anti-Meningitis Serum.—It is reported from Castalia, Ohio, that Dr. Simon Flexner of the Rockefeller Institute in New York, has elaborated a curative serum for the treatment of cerebro-spinal meningitis. This serum has been administered with striking success, it is said, during an epidemic of the disease in the Ohio town.

Health officers, town clerks, and physicians will find in this number of the Bulletin the Pure Food Laws and Regulations. Copies for town representatives and justices will be forwarded to the town clerks, who will distribute them as required by law. If from any cause any one does not receive a copy, please notify the secretary, Henry D. Holton, Brattleboro.

The following examinations of specimens other than milk have been made at the Laboratory during the last quarter:—

For typhoid, 192; positive, 29. Tuberculosis, 400; positive, 92. Malaria, 12; positive, 1. Diphtheria, 380; positive, 122. Total examinations of water, 192; ground waters, 146; normal, 30; surface waters, 46; normal, 30. Miscellaneous foods, 29; standard, 17. Maple products, 14; standard, 14. Liquors, 204; standard, 166. Miscellaneous examinations, 55; negative, 35. Medico-legal examinations, 16. Autopsies performed, 6.

Digitized by Google

Railroad Fatalities in This Country.—The Interstate Commerce Commission has given out the statistics relating to the casualities to passengers and railroad employees during the quarter ending March 31, 1907. The total number during this period was 20,563, as compared with 20,944 reported in the preceding three months—a decrease of 381. The total number of passengers and employees killed in train accidents was 421, and the number of injured 4,920, 53 less in the number killed and 20 less in the number injured, as compared with the record of the preceding three months. The total number of collisions and derailments in the quarter was 3,991 (2,078 collisions and 1,913 derailments), of which 323 collisions and 229 derailments affected passenger trains. The damage to cars, engines, and roadway by these accidents amounted to $3,536,110.

WHAT WE PAY FOR CELEBRATING THE NATIONAL BIRTHDAY.

According to the statistics gathered by the *Journal of the Medical Association* in 1903 the deaths resulting from explosives were 466, of these 406 were from tetanus. The injuries which resulted in recoveries are not known, but were undoubtedly very many more.

Publicity has been given to this matter. The great mortality from tetanus was induced by the use of the blank cartridge. The warnings given by the public health authorities, together with the thorough antiseptic treatment adopted by the profession in caring for these cases, have reduced materially the mortality. The number of cases of tetanus in 1907 was only 73, but the deaths caused by the use of other than the blank cartridge have increased from 60 to 102. It would seem that the medical profession and health authorities have done what they could to prevent this annual slaughter.

The great mass of the people, however, have not awakened to a sufficient realization of this needless massacre of our youth for them to insist upon the enforcement of the laws on our statute books intended to prevent this annual slaughter of the innocents.

How long shall this continue?

Digitized by Google

Digitized by Google

614.0979
V 2 U

Bulletin No. 2, Volume VIII.

Issued Quarterly by

Vermont State Board of Health,

December 1, 1907.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS:

The Value and Interpretation of Sanitary Water Analyses, by H. B. Stone, M. D., Director of Laboratory of Hygiene, Vermont State Board of Health. Page 3.

The Local Registrar of Vital Statistics, by Cressey L. Wilbur, M. D., Chief Statistician of Vital Statistics, Washington, D. C. Page 10.

Duties of Physicians and Town Clerks in Making Returns of Vital Statistics, by H. B. Whittier, City Clerk, Rutland. Page 19.

Purification of Water, by George W. Fuller, C. E., New York City. Page 33.

The State Laboratory of Hygiene and Its Work, by H. B. Stone, M. D., Director and Pathologist of the Laboratory of Hygiene, Vermont State Board of Health. Page 40.

Duties of Health Officers, by Henry D. Holton, M. D., Secretary of the Board. Page 45.

State Laboratory Statistics. Page 54.

News Items. Page 60.

Town Clerks, Health Officers, and Physicians. Page 60.

BRATTLEBORO, VT.
1907

Digitized by Google

Digitized by Google

THE VALUE AND INTERPRETATION OF SANITARY WATER ANALYSES.

By B. H. Stone, M. D., Director of Laboratory of Hygiene, Vermont State Board of Health.

The day has passed when it was necessary to apologize for presenting a paper on any phase of sanitation before a body of general practitioners. Medicine is passing through a transitional period and the function of the physician is fast changing from that of healer of a sick public to the much higher one of preserver of the public health. That preventive medicine is the scientific medicine of the future, no one who has watched the developments of the past twenty years can doubt. That this is appreciated by the great public is amply proven by the readiness with which legislative bodies, composed largely of laymen, pass any measures to strengthen and make more effective the work of the state sanitary system. It is being more and more generally recognized that a state can spend its money no more wisely than in fostering any measures which tend to preserve the lives and health of its citizens. That progressive medical men in all lines are fully cognizant of the changed conditions and the added responsibilities which these new conditions bring is amply proven by a study of the medical literature of the day.

The future of preventive medicine can be predicted in no more eloquent language than that of the brilliant surgeon, master of a branch of medicine essentially curative, Nicholas Senn, who commenced a recent address with the following words:—

"The final triumph of scientific medicine will be the victories of preventive medicine. What has been accomplished so far in the protection of mankind against disease, is but a mere beginning, a skirmish preceding a long and continuous campaign, a succession of fierce battles, with the causes of infection and contageous diseases, which will ultimately crown with victory the unremitting and unselfish toil of the most beneficent of all professions. . . . .

"The clientelle of the physicians is growing smaller and smaller, but their glory as humanitarians and scientists is rising and will reach the zenith after coming generations of more erudite physicians have conquered and laid at their feet the two worst enemies of mankind—tuberculosis and cancer."

Considering the fact that this branch of medical science is a development of the last two decades, and that the terms, state medicine and sanitary science, were unknown twenty years ago, the accomplishments are remarkable.

Every state in the union and every civilized country is now provided with a well-organized department of sanitation whose function is to guard the health of the state and secure its citizens as far as possible from the ravages of preventable disease.

Digitized by Google

Largely to this organization is due the fact that widespread and fatal epidemics are a thing of the past. But when the state has done its utmost much still remains to be done in the suppression of scattering cases of infectious disease. To medical men in general practice falls this responsibility and that the doctor will unhesitatingly devote himself to the prevention of disease, that he is everywhere the leader in all sanitary matters, oftentimes fighting against the stupidity, ignorance and bigotry of the very populace who are sure to be immeasurably benefited by such measures, while he is the only man in the community who will be actually out of pocket by a lessening of disease, is a splendid example of professional philanthropy and one which should make us proud of the title we bear.

The sanitary education of the public is largely in the hands of the general practitioner. No one else comes so intimately into touch with every family in the community. In this association there is an opportunity such as is accorded to no one else to instill the principles of personal hygiene, which is the foundation upon which all public sanitation must rest.

Probably as much as has been accomplished in lessening disease and saving human life by an understanding of the relation of water to disease and the consequent abandonment or purification of impure and dangerous supplies as in any other way. A large number of the disastrous epidemics of the middle ages were due to polluted water supplies, used not so much because the people of the time failed to appreciate the value of pure water as because they lacked the means of detecting infection available to us now, for a water very often fails entirely to give a warning by its physical properties of taste, smell and appearance. Much of the danger has been eliminated by the perfection of methods of detecting these impure waters.

From remote antiquity the highest value has been set upon an abundant store of pure water. Tremendous expenditures have been made to secure this element in abundance. It is probable that more money has been spent in undertakings for this purpose than for all the other engineering feats of the world combined. We look upon the Panama Canal as a gigantic feat of human engineering, but New York City has already undertaken for the purpose of bringing a new supply of pure water from the Catskill Mountains a task whose achievement will cost twice the amount estimated as essential for the completion of this big ditch.

This importance of pure water is based on several sanitary axioms:—

1. Many of our worst diseases are transmitted very largely by this vehicle. Typhoid fever, epidemic dysentery, and other diarrhœal diseases, and Asiatic cholera are universally spread in this way. Furthermore, the sanitary history of many of our large cities show that the general death rate from all other diseases is materially lowered by a change from a polluted to a pure water. It seems that the use of impure, highly polluted water tends to lower the general vitality even when it does not produce specific infection.

2. Every member of a community uses water—about 58 per cent of our

Digitized by Google

entire body weight is made up of this element. Large amounts of it are used in a cooked condition and more people take this than any other article of diet from a common source.

The means of detecting an infected water supply are threefold:—

1. A study of the vital statistics of the users.
2. An inspection of the surroundings.
3. An analysis of the water.

An abnormally large typhoid rate, such as prevails in some of our towns, is the most damaging evidence of the impurity of the water. The method of proof is not always sufficient, however, many times the constant users of a bad supply seem to acquire an immunity to the pollution present, and most of the cases are acquired by the transient visitor who leaves the locality before coming down with the disease. That the typhoid rate rises in the big cities at the return of the summer visitors is a sad commentary on the rural water supplies of this country. Then again it is an expensive method to wait until a community becomes infected with a polluted supply before condemning it. It is a method of experimentation of which none of us care to be the victims.

If we saw a sewer emptying into a river we should without a great amount of perspicacity suspect the water below. Yet this is the condition that prevails in many of our towns in this state. The reason for this is undoubtedly the old and firmly grounded fallacy that running water purifies itself. Running water does not purify itself nearly as rapidly as standing water, and all other things being equal the slower a stream flows the quicker will the bacterial impurities disappear. It is an axiom in sanitary science that no river is long enough to make the purification of infected sewage, introduced even at its source, certain.

The great purifying agency is sedimentation. But the impurities, often infected, gathered in the deposit at the bottom of a river are likely to be swept into the current again at some period of high water.

Next to sedimentation in the purification of water comes sunlight and, the least important, oxidization.

The sources of greatest danger are those supplies which use the water of a small, rapidly running stream upon which at some more or less remote point is a farmhouse or two. The Ithaca, Scranton and Cuttingsville epidemics are recent instances of this sort. These are the sort of supplies which bring danger like lightning out of a clear sky. One defecation or micturation from a case of walking or convalescing typhoid fever may suffice to infect a large percentage of the users below. No analysis can predict such a calamity for such a supply. An inspection will immediately suggest the danger.

The third method of determining the condition of a water supply is by analysis, and this should always where possible go with an inspection.

The analysis of the water is a complicated process and the interpretation of such an analysis requires much experience. That much confusion is

Digitized by Google

caused by the numerical result of such a sanitary analysis of water there can be no question. Many times the analyst himself without an intimate knowledge of the surroundings of the water source may be led astray. There are, however, a few fixed principles used in the interpretation which I shall try to explain. These reports will be brought to you many times for your opinion, and I trust that such an imperfect explanation as I may give will be of some assistance to you in understanding and explaining them.

In the first place it should be thoroughly understood that an analysis does not take the place of an inspection of the source of the water and its surroundings. Such a sanitary survey will often make clear analytical results which would otherwise be confusing and often will influence very materially the interpretation of such findings. It is not too much to say that if only one form of examination is possible, the sanitary survey should be the one selected. Unfortunately for the conclusiveness of such an examination, sources of contamination are often hidden, unsuspected communication with the water supply being affected through some underground channel. In these cases such an examination would fail entirely to detect trouble and the fault would remain unsuspected without analytical methods.

A certain farmhouse was notoriously unhealthy, the inmates had suffered at various times from diphtheria and typhoid fever. The family was supplied with water from a well situated at a good distance from and above the house and from all inspection, well protected from contamination. This well gave an unfailing supply of water which was used for all domestic purposes and was said to be always cool, bright and sparkling. An analysis of the water showed very little organic matter but a large amount of chlorides and nitrates. In attempting to ascertain the source of the pollution, it was found that a watercloset in the house (which was an old one) discharged its contents into a dry-stoned cesspool which was at a higher level than the bottom of the well. When the cesspool was filled in and the sewage carried elsewhere, the well ran dry. In this case the water was a concentrated, purified sewage. There is no doubt but the same water was used over and over again. After being defiled by the closet, slops, etc., it ran into the cesspool, then filtered through the soil, during which process the organic matter usually became completely oxidized, and ultimately found its way back into the well to be used again for domestic purposes. Doubtless at times, possibly after heavy rain, the cesspool filled too rapidly for complete purification to be effected and this impure water may have been the cause of the ill health among those who consumed it. That there are many cases parallel to this one, analysis of rural well water would tend to show,

The chemical and bacterial examination of a water sample simply ascertains the presence or absence of certain substances, organic and inorganic, living and dead, which happen to be in the water at the time of taking sample, and can, of course, only in a general way determine the source or predict future additions of the same material.

Digitized by Google

In the water from a well changes are slow and the stable chemical substances found at one time are apt to be present at subsequent times. Of a stream or flowing spring this is much less true. From such sources water examined on two consecutive days may differ greatly, depending upon the surface materials which may be washed into the stream in time to be caught with the first sample and be miles below at the time of taking the second sample.

The chemical substances found by the analyst are of themselves of no importance, being (with the exception of lead) perfectly harmless. But these substances have no place in a normal water and their presence in any considerable quantity is an indication that the water has at some time in its course through or over the earth come into contact with matter from which these substances have been derived. They are the ineffaceable marks of associations past or present. From these chemical substances the nature of these associations can with a fair degree of accuracy be inferred.

Of these chemical substances found in water the most important from a sanitary point of view are nitrogen and chlorine. The significance of nitrogen in its various forms is due to the fact that the organic substances in the bodies of plants or animals and their excreta are largely composed of nitrogenous compounds. As this is practically the only source of nitrogen in water the element is a measure of the quantity of such matter which has gained access to the water. Further the condition in which the nitrogen is present gives some clue to the length of time which has elapsed since the water received this pollution. This matter which is all classed under the general term sewage first appears in the form of undisintegrated albuminous bodies. From these in the process of analysis the nitrogen is eliminated by the use of alkaline permanganate and is expressed in the analyst's results as albuminoid ammonia. The albuminous bodies in water are very soon decomposed by the action of bacteria with the liberation of free ammonia. The free ammonia is in turn soon oxidized by the agency of certain bacteria to nitrites and nitrates successively. Beyond this stage there is no change, and the organic matter is said to be completely mineralized. Thus by determining the amount of nitrogen in a water we may ascertain the amount of animal or vegetable organic matter which has been dissolved in the water, and by further determining in what form it is present we can tell whether the pollution is of recent or remote date. If the nitrogen is present in the form of albuminoid ammonia, free ammonia, or nitrites, we can be sure that the water has been polluted at a recent date, for these stages are transitory. The oxidation process has not had time for its completion. If on the other hand the high nitrogen is all present in the completely mineralized form of nitrates, the inference of pollution is just as well grounded, but the indications are that the pollution occurred in the more remote past.

The presence of and changes in the nitrogen content of the water are identical in pollution of animal or vegetable origin, and from such findings we are not able to determine whether decayed vegetation has had access to

Digitized by Google

the water or whether the nitrogen comes from the more dangerous animal excretions. Fortunately we have another indicator which serves admirably to settle this point. The plants contain only infinitestimal amounts of sodium chloride, while on the other hand animal excretions are rich in this element. In this state there are no natural deposits of salt and we are so far inland that the effect of sea spray is practically nil, hence here the chlorine may be taken as an indication of animal pollution. All soil contains a small amount of salt, which is reflected in the waters which run over and through it. This is known as the normal chlorine and has been determined for every locality in this state. Anything above this means animal pollution or sink drain pollution, which latter can usually be excluded by a disproportion between the chlorine and nitrogen content.

So much for the chemical examination. The bacteriological examination lends further aid in the interpretation. A large number of bacteria in a ground water indicates a recent pollution from the surface. Large numbers in a surface supply are of less significance, for these waters are, as their name indicates, continually receiving washings from the surface soil, which is always filled with bacteria. Bacteria which have their property of liquefying gelatin are quite characteristic of surface soil, and the presence of many of these also lends color to the diagnosis of surface water contamination. The search for the pathogenic bacteria is limited to the colon bacillus. Finding this organism means that the waters have received pollution from animal excretions, probably within two or three months, as these organisms will not live much longer than this in water.

The analyst encounters certain types of water clearly representing certain conditions.

I.

A NORMAL GROUND WATER.

Albuminoid ammonia not over	.03
Free ammonia not over	.01
Nitrites not over	.002
Nitrates not over	.500
Chlorine not over	1.

No colon bacilli present.

II.

A RECENTLY POLLUTED WATER.

Albuminoid ammonia (high)	.200 or over
Free ammonia (high)	.1
Nitrites (high)	.010
Nitrates (not high)	.5
Chlorine (high)	2.

Colon bacilli present.

Digitized by Google

III.

A PAST POLLUTED OR SEEPAGE WATER.

Albuminoid ammonia (not high)	.03
Free ammonia (not high)	.01
Nitrites	.000
Nitrates (high)	3.
Chlorine (high)	5.

No colon bacilli present.

Such a water (III.) may have been polluted at some remote time in its history, or may be simply filtered sewage. The constituents are entirely harmless, and if one can be assured that the filtration will remain effective, or that no new unfiltered contamination can become mixed with it, there is no reason for abandoning such a supply. The surroundings of such waters should be thoroughly examined and the water itself subjected to frequent analysis. The filtered water from a badly polluted river supply will show these characteristics. Much of our ground water is really a polluted surface water, filtered through the soil, and in such cases will prevent these characteristics. We can control artificial filtration, but unfortunately we have no control over ground conditions, and filtration is apt to be imperfect at times.

A water polluted in the past and still receiving fresh polluted material will have the following characteristics:—

IV.

Albuminoid ammonia (high)	.2
Free ammonia (high)	.1
Nitrites (high)	.01
Nitrates (high)	3.
Chlorine (high)	5.

Colon bacilli present.

Such a water is always dangerous, for any water receiving unfiltered fresh sewage may contain the living germs of typhoid at some time. The elements of pollution may be present in such concentration as to alter the physical character of the water, but much less often there is nothing in its odor, color or taste to indicate anything abnormal. Such waters may be regarded as unquestionable in character by the user, while others having taste and odor due to the presence of perfectly harmless microscopic plants of the algæ group will immediately cause alarm.

In this state, with its innumerable hills and mountains whose sides are covered with streams of pure water, removed above all possibility of contamination from human habitations, it would seem that no one need suffer for lack of it. Yet it is a fact that a large proportion of our population is using polluted water—water from wells dug near out-buildings and draining

Digitized by Google

a soil reeking with the filth of years. Most of these old wells should be abandoned and replaced by spring supplies. Not until this is done will we see our rural typhoid rate of thirty-one per one hundred thousand—the highest in New England—drop to a reasonable rate.

THE LOCAL REGISTRAR OF VITAL STATISTICS.

BY CRESSEY L. WILBUR, M. D., CHIEF STATISTICIAN, BUREAU OF THE CENSUS, WASHINGTON, D. C.

The local registrar of vital statistics is the king-pin without which the whole system of registration breaks down. We may enact that all deaths shall be registered immediately after their occurrence, that standard certificates of death shall be employed, and that no bodies of decedents shall be interred or removed without the sanction of a burial or removal permit; we may give all manner of general authority to the central registration office of the state,—unless there is included in the law the absolutely essential requirement that there shall be a sufficient number of local registrars, conveniently located, each of whom is responsible for the complete registration of the births and deaths in his district, and alert and vigilant to see that every single one, of all of the births and deaths that occur in his jurisdiction, *is* properly registered as required by the law, we shall have a more or less defective registration, and in consequence imperfect legal records and uncertain vital statistics.

The official registration of births and deaths is a matter of comparatively recent origin as conducted on the scale of a national or state administration. The first modern registration system was that of England, established in 1837. "The days of a man are three score years and ten," and an infant born in England and registered as a birth during the first year of national registration and as a death during the current year would merely have accomplished the scriptural duration of life. In such a lifetime the official registration of vital statistics has spread over the entire civilized world—except the United States. The importance to the individual and to the community of authentic records of births and deaths is everywhere practically recognized except in this country. But there is hope that the United States has begun to enter upon an era of greater appreciation of the necessity of the registration of vital statistics, and that in time we shall be prepared to take a more fitting place among the progressive nations of the earth in this respect.

Vermont has reason to be proud of its history as a registration state. Beginning in 1857, only twenty years later than the establishment of the

Digitized by Google

English system, we have now arrived at the semi-centennial of the collection of vital statistics in this state. It is one of the four states now included in the registration area of the United States whose reports run back to a period before the Civil War. The others are Massachusetts, Connecticut and Rhode Island.

I shall not undertake to consider the character of the Vermont reports or the nature of the early law, subjects which were reviewed in an interesting paper on the "Importance of More Full and Correct Returns of Vital Statistics," read by Mr. Charles E. Allen before the School for Health Officers in 1900. The general course of registration may be compared with that of the adjacent state of Massachusetts. It is certain that in the earlier years of registration in both states there was a considerable degree of incompleteness in the returns. Just how complete they are to-day we do not definitely know, except that, in a general way, the registration of births is admittedly less accurate than the registration of deaths.

It is a curious thing, in studying the official vital statistics of the United States in comparison with those of foreign countries, that we should be forced continually to make these damaging admissions relative to the completeness of our figures. When a law is enacted abroad providing for the compulsory registration of all births and deaths in a country, there is a presumption that it will be enforced, and that all births and deaths occurring among the inhabitants of the same will be duly recorded. With us the presumption would seem to be the other way. It appears to be largely a matter of personal convenience to the individuals and officials concerned as to whether the law shall be complied with or not. Nearly every state in the union has passed laws, and some of them have passed many laws, requiring the registration of vital statistics, but at the present time less than a score of them are included in the "registration area" from which transcripts are received by the Bureau of the Census, and these transcripts relate to deaths alone, and the standard of admission is only 90 per cent of complete registration! There is not a single state at present that possesses a complete registration of births, and probably not a single city of any considerable size in this country.

Is it not beginning to be time for us to leave off this slipshod, negligent, amateurish manner of administration of important public affairs—important equally to the state and to the individuals affected—and attempt a more thorough enforcement of registration laws? In a letter to the governor of Maryland, Prof. William H. Welch, president of the state board of health, says:—

> Few if any American states have brought their mortality registration up to a satisfactory degree of efficiency in the past five years. Maryland would probably be admitted at this time to the class of "registration states," according to the United States Census standards. That is to say, Maryland's mortality lacks no more than 10 per cent of completeness. *But I beg your Excellency to consider that this is the root and foundation of our sanitary institutions, and that anything short of numerical completeness is not to be*

Digitized by Google

tolerated in our statement of losses by death. No argument is needed on this point; it is the business of the state to discover where this 10 per cent shortage occurs, and to compel its detailed statement. . . . . Nine tenths of the people of Maryland now know the value of the systematic registration of deaths, and should no longer wait upon the 10 per cent who consider such information to be of little or no utility. The motive in those localities is to save a petty part of a petty expense. It is possible for the authorities to comply formally with the law, without exercising any real supervision over current mortality, so that but a fraction of the true mortality may be recorded, while the authorities cannot be charged with a specific misfeasance.

Should we not hold such language in regard to the registration of births as well as of deaths? There is increasing interest in this subject, and promising efforts are now being made in various parts of the country to secure better registration of births. Complete success will depend chiefly upon the efficiency of the local registrar, and while there is some difference in the exact method of registration, he should be held responsible for the absolute completeness of returns from his district as he is in England, according to the instructions of the Registrar-General:—

It is the duty of every registrar to register promptly the birth of every child born alive, and every death which occurs, within his district; and he is required by statute to inform himself carefully thereof.

It is left to his discretion to employ such means of informing himself thereof as may appear to him best; but he must employ *some* means, and must not neglect inquiry, in the hope that, without exertion on his part, information will be voluntarily tendered.

He should apply to those persons who, from their occupations, are most likely to have immediate knowledge of any birth or death within his district, such as medical practitioners, midwives, nurses, and undertakers; and he should also systematically consult the announcements of births and deaths in the local newspapers. On learning of the occurrence of a birth or death he should at once make a memorandum thereof, and take such steps as may be expedient for effecting the registration.

The law in Vermont makes it the duty of the physician or midwife, if one be present, otherwise the head of the family in which a birth occurs, to file a certificate of birth with the town clerk within ten days thereafter. This he records, and twice a year, in the months of February and August, transmits a certified copy to the secretary of the State Board of Health. The town clerk is the local registrar, so far as births are concerned, and is, or should be, responsible for the proper registration of all births in his town.

For deaths, however, there would seem to be a divided responsibility. No dead body can be interred or removed from the town in which the death occurred without a permit, based upon a certificate of death issued by the attending physician, which permit is made out by the health officer, deputy health officer, or, only in case of their absence, by the town clerk. The town clerk receives the original certificates of death from the health officer or deputy, and also the permits from the sextons, during the first

Digitized by Google

week of the following month, records them, and transmits certified copies to the central registration office at the same time that he reports the births. He does not, however, have the opportunity of examining the certificates prior to the granting of the permits, and so cannot be held directly responsible for any imperfections or omissions of data. On the other hand, the health officer or his deputy does not record the deaths or report them to the state registrar, nor would his attention, perhaps, be called to the corrections necessary to secure perfect returns. It would appear that possibly in this way there may be opportunity for the occurrence of an unusually large number of omissions in certain classes of data.

As the law stands in Vermont at present, there should be the fullest coöperation between the town clerk, who may be taken as the local registrar of record, the health officer or deputy health officer, who acts as local registrar for the granting of permits, and the secretary of the State Board of Health, who is the state registrar for the reception, examination and compilation of returns. (The duplication of the Vermont system extends to the central office, since the returns are transmitted by the secretary of the State Board of Health to the secretary of state for permanent preservation and indexing, the latter being thus the state registrar for this purpose as originally provided in 1856.) If a record of death were carefully examined by all of the officials into whose hands it passes, namely, (1) health officer, (2) town clerk, (3) secretary of the State Board of Health, and (4) secretary of state, it would seem that any errors or imperfections might be very thoroughly winnowed out by undergoing so many inspections. The very complication of the system, however, renders it difficult to locate responsibility for omissions. The original certificates of death do not go to the central office, but "certified copies," not, however, in the same form or containing *all* of the information of the originals, represent them. It is evident that in the process of copying, especially in copying the medical terms used on the original certificates, many errors may be introduced. In some cases such errors are readily corrected, as in the instance of "information of the brain" instead of inflammation of the brain mentioned by Dr. Holton at a former session of this school. In others, and especially when terms regarded by the town clerk as illegible or unimportant are omitted or altered, serious imperfections may result.

In undertaking to obtain the correction of an imperfect return, one, for example, in which the age of decedent or cause of death was omitted, the central registration office cannot know whether the town clerk or the health officer was responsible for the error. Of course the health officer should not accept an imperfect certificate of death, but if he does and files it with the town clerk, I do not see that the town clerk is under any obligation to secure the missing information. It would be desirable, indeed, that the town clerk should at once call the attention of the health officer to any omissions, so that the items could be secured and properly entered before the copies are sent to the state registrar. This is one of the most serious

Digitized by Google

difficulties in the present law, namely, that a health officer may go on receiving imperfect certificates for six or eight months before his attention is called to their imperfection. Prompt monthly returns and immediate examination of certificates by the central office are very essential to the securing of perfect records.

I have recently mailed to all of the health officers of the state, at the suggestion of Dr. Holton, copies of the census pamphlet on "Registration of Deaths—Practical Methods to Secure Complete Returns," and would call special attention to the instructions and explanations in regard to securing correct statements of each item required upon the standard certificate of death, a blank which is in general use in this country and which I am glad to say Vermont was one of the first states to practically adopt. A health officer or deputy health officer should carefully examine the certificate of death when presented to him, and see that *every item* thereon is fully and accurately filled out, as far as it is possible to secure the information, *before* he issues the permit. The principal items on a certificate of death may be grouped as follows:—

(1) Personal particulars:—

Full name (correctly spelled).
Name of husband or wife, if married.
Name of father.
Maiden name of mother.

(2) Statistical particulars:—

Date of death.
Place of death.
Sex.
Civil condition.
Age and date of birth (see that they agree).
Birthplace.
Birthplace of father (state or country).
Birthplace of mother (state or country).
OCCUPATION.

(3) Medical certificate of cause of death:—

CHIEF CAUSE (duration).
Contributing cause (duration).

As the certificates form a permanent record, it is evidently desirable that the greatest care shall be taken to have all proper names absolutely correct. For this reason, it is more satisfactory to have this portion of the certificate filled out by a relative or friend intimately acquainted with the family as the informant than by the undertaker or physician. An official registry of a death is, or should be, a more enduring monument than marble or bronze, and respect and affection for the dead should insist on care and precision in this respect. Only the best of paper and permanent ink should be used, and records should be preserved in fireproof vaults, secure from all intrusion and mutilation, to the latest posterity. To file a misspelled, illegible certifi-

Digitized by Google

cate, made out in pencil or, worst of all, with "indelible pencil," is a serious breach of propriety as well as of official duty; an undertaker who habitually files such certificates should be compelled to amend his ways.

All of the statistical particulars are important. It is utterly inexcusable to file a certificate with the omission of age or sex. If the age cannot be exactly known, the approximate age should be given. About three times as many deaths of "unknown age" are received from Vermont as from the other registration states in proportion to the total number of deaths returned. The birthplaces of parents are also very defective in the Vermont returns, probably from the fact that this item was recently added in order to conform to the requirements of the standard certificate. The percentage of imperfect returns in this respect is decreasing, but health officers should exercise special care to secure this information in all cases. If the decedent is born in the United States, but the exact locality of birth is not known, at least the country (United States) should be given. There is, of course, no objection to a statement of town of birth, which information may be of future value for genealogical purposes, but the *country of birth* is really all that is required for statistical purposes, and this may nearly always be given.

One of the most important of the statistical particulars is occupation, and this is also the one item concerning which it is most difficult to give precise instructions. I hope in the near future to place in the hands of every physician and registrar of vital statistics in the United States some specific instructions on this point, but in the meantime will refer you to the statements made in the pamphlet and ask especially the definite statement of all *gainful* occupations.

Cause of death is another most important item, and naturally comes in a category by itself because it requires some professional knowledge to fully appreciate the relations of the terms returned under this head. In the pamphlet above mentioned may be found an explanation of the international classification of causes of death, according to which the mortality statistics are compiled both in the state and census reports, and also a quite extensive list of indefinite and unsatisfactory causes of death which should be eliminated from mortality returns as far as possible. Physicians will readily coöperate with registration officials in the improvement of mortality statistics, provided they understand the object of more definite statements of causes of death and the most desirable forms to be used in making out certificates. This information may be given them by the special pamphlet, "Relation of Physicians to Mortality Statistics," copies of which have been sent to you, but it is also necessary that attention should be called to individual indefinite statements as they come up in the course of registration. Here arises a practical difficulty, and it is doubtful how we may best secure satisfactory statements in many cases. The local registrar, if not a physician, must be very guarded in calling the attention of a reporting physician to an apparently unsatisfactory statement of cause of death, and

Digitized by Google

as a rule should do so only on the basis of specific directions from the state registrar. When the local registrar (health officer) is a physician, the difficulty is not altogether removed. There is such a thing as professional jealousy in the medical profession, and one physician may seriously object to have his professional statement of cause of death criticised by another physician, clothed, as he regards it, with a little brief authority. Probably the best way to secure the completion of indefinitely returned causes of death is by direct correspondence between the state registrar and the reporting physician. This statement applies to a state area and the handling of returns from numerous small districts. In cities the local registrar may insist on strict compliance with his requirements, as in the following directions printed on the back of the certificate used in the city of New York:—

Certificates will be returned for additional information, which give any of the following diseases, without explanation, as the sole cause of death:—

Abortion,	Gastritis,	Peritonitis,
Cellulitis,	Erysipelas,	Phlebitis,
Childbirth,	Meningitis,	Pyemia,
Convulsions,	Metritis,	Septicemia,
Hemorrhage,	Miscarriage,	Tetanus.
Gangrene,	Necrosis,	

No certificate giving "heart failure," "dropsy," or other mere symptom, as the sole cause of death will be accepted, unless accompanied by a satisfactory written explanation.

There are, however, certain classes of indefinite returns of causes of death concerning which the local registrar should be instructed to demand more specific information in all cases. In all deaths from violence the character of injury as accidental, judicial, homicidal, or suicidal, should be stated, and the agent or mechanism causing death. The exact nature of the wound inflicted, occurrence of fracture, etc., is of less statistical importance. Thus "accidental fracture of skull, struck by locomotive," is a satisfactory statement for compilation, whereas the death returned either as "Accident," "Fracture of skull," or "Struck by locomotive," each without further explanation, would not be sufficient to enable the death to be certainly classed. All deaths from cancer should state what part of the body was the seat of the cancer, etc. In this connection I may call attention to the very excellent instructions given by Dr. Charles L. Allen, editor of the first four Registration Reports of Vermont, in the Appendix to the Second Annual Report for the year 1858. Dr. Allen says:—

In some cases more particularity might be necessary and could easily be given. In such instances it would be well for the persons who keep records to enter more at large the causes of death and any extraordinary circumstances attending them. With the local causes there should be given the special part affected; and with the others there should be also given some positive characteristic by which the disease could be easily classed. No clerk or registrar should consider any cause of death recorded satisfactorily that he cannot easily and without doubt classify.

Digitized by Google

[SOME SELECTED INDEFINITE RETURNS.]

Abscess of ————. The location of the abscess should be given, and disease which led to its formation.
Accident. Specify the kind.
Brain, Disease of. Tell what disease.
Cancer. Give its location.
Cut. Accident, Homicide, or Suicide. Also the place of the wound.
Debility. This term should not be used if any specific disease can be ascertained which caused the debility.
Dropsy. If of any particular part or organ, or following scarlatina, or other disease, such facts should be stated.
Drowned. State whether accidental, homicide, or suicide.
Fever. Name the kind, if possible.
Fracture of ————. Record the part fractured, also whether accidental, homicide, or suicide.
Gunshot. Record whether accidental, homicide, or suicide.
Heart disease. Tell what kind of disease, if possible.
Hip disease. State whether scrofulous [tuberculous] or simple inflammation.
Infantile. This term is recommended to designate the unknown cause of deaths occurring shortly after birth, and should not be used when any specific disease can be ascertained.
Old age. Should not be used when any specific disease can be ascertained.
Pneumonia, lung fever, inflammation of the lungs. If this occurs as a sequel of measles, scarlatina, whooping cough, or other disease, it should be so registered.
Poison. The kind of poison should be stated, and the time intervening before death, also whether accidental, homicide, or suicide.

These instructions have a very familiar appearance, if you will compare them with those contained in the recent census pamphlets, and we can unqualifiedly indorse them to-day.

CONCLUSIONS AND RECOMMENDATIONS.

For forty years, beginning with 1857, the Vermont registration work went on the even tenor of its way with very little change in the registration law. For the first twenty years or so the reports were ably edited and compiled under medical direction, and there was some progressive improvement in the character of the returns. Then a period of dry rot set in. The statistics were no longer compiled under medical supervision, and in 1896 it became necessary to reform the system by placing it under the direction of the State Board of Health.

Since that time there have been many changes in the law, and modern methods, the requirement of burial permits, and semi-annual instead of annual returns to the central office have been instituted. On the whole the results under the present system have been fairly satisfactory, and I am reluctant to suggest any further change, except in the direction of securing greater promptness of returns and consequently more thorough supervision of the work of local registrars by the central office.

Digitized by Google

In the "Necessary Provisions" for an efficient registration law, prepared some years ago by a committee of the American Public Health Association, and which have been thoroughly tested by application in the laws of many states, may be found the following recommendations which I regard as most important:—

A complete, permanent record of each death should be kept in the office of the local registrar and in the central registration office, and provision should be made for indexing the records in strict alphabetical order.

Returns should be made *monthly* to the central office, and within a certain specified period after the close of each month. This is necessary in order to enable the central office to ascertain the efficiency of local registration, and to scrutinize the certificates and secure corrections, if they are found defective, as soon as possible after the cases are reported.

Returns should be made to the central office in one of these two ways:—

a. A copy of each record may be made by the local registrar; in which case the *original* record will be forwarded to the state office.

b. The original record may be retained by the local registrar; in which case a *complete copy* should be made in permanent form, certified by the local registrar, and forwarded to the state office.

The first mentioned method is considered preferable.

It is only by requiring prompt monthly reports that the state registrar can know whether all local registrars are properly performing their duties during the year. They are also very desirable so that transcripts can be prepared during the year and the complete returns for the state be sent to the Bureau of the Census very soon after the close of the year. All of the recent registration states make this requirement a feature of their laws, and amendments have lately been made in the laws of Massachusetts and Maine so that monthly returns may be secured.

I sincerely hope that an amendment may be made requiring local registrars to make returns to the central office at the close of each month, preferably of the original certificates of death, but if not, then exact copies of them; and it should also be provided that local registrars shall make regular monthly reports when no deaths have occurred, so that the state registrar may know at the close of each month that he has absolutely all of the deaths that have occurred in the state during the month. Then he can readily examine the certificates and take up any imperfect or defective returns with the local registrars or reporting physicians while the deaths are of recent occurrence and the information can readily be obtained.

I believe that such an amendment would not only be very useful in greatly improving the quality of the returns, but that it would also be an essential factor in securing the absolute completeness of registration.

Digitized by Google

DUTIES OF PHYSICIANS AND TOWN CLERKS IN MAKING RETURNS OF VITAL STATISTICS.

By H. B. Whittier, City Clerk, Rutland.

Judging from what I have been able to observe, I should say that the present laws governing the making and recording of vital statistics are adequate for present needs at least, and that the certificates and permits in use are sufficiently comprehensive. Some may think that too many questions are asked, that there is too much "red tape," but any one who has to do with records knows this is not the case. No matter whether the certificates call for much or little information, there will oftentimes be some questions that will not be answered, so that it will be necessary in the future, as it often is at present, to refer for certain information to some other record than that in which it should be found; for instance, to the death certificate for data that should be in the birth certificate, and *vice versa*. With adequate laws and comprehensive blanks, it is only necessary that those who have to do with the making of and caring for statistics should have a realizing sense of the importance of the work and should exercise due care in doing it. This applies especially to the physician, the health officer and the town clerk, and incidentally to the undertaker, sexton and clergyman.

It is not to be expected that the individual will be interested in this question or will inform himself in relation thereto. It is something that touches him but few times in life, if at all. He possibly may be like the father who came to my office not long ago to make and file the certificate of the birth of his *sixteenth* child. When asked the name of the attending physician he replied that they dispensed with physicians' services years ago—did n't need them. This man knew just what to do to make a proper record of the birth, but where there is one family striving so strenuously for a Roosevelt medal that from sheer force of habit they become familiar with the laws and customs relating to making and filing certificates, there are hundreds of others that furnish few such certificates and have no idea of what should be done with them, while many, in these days of "race suicide," furnish none at all. And in case of death in the family, if the physician does not get the data for the certificate, the undertaker attends to it, thus relieving the family from the necessity of doing anything but answering the necessary questions. So the individual does not need and should not be expected to pay much attention to the question of making and filing certificates.

The physician holds the key to the situation so far as the making and filling of certificates is concerned. If certificates are complete and correct when they leave his hands, and if he files all of them and files them promptly,

Digitized by Google

he has done his share in making up statistics and is not subject to criticism. Most physicians pay proper attention to filling out certificates and file them quite promptly, but there are some who make them in a slipshod manner, some who file them when it suits their convenience, and some who, I fear, occasionally neglect to file them at all. I reported 236 births to the State Board of Health last year, of which certificates about one third were filed within ten days, the time specified in the law; about forty per cent within two months, and the remainder within from three to ten months. There were, of course, some that were not filed until after the last report for the year had been sent in. The neglect to file certificates within a reasonable time occasionally prevents the clerk from getting the additional information if the certificates are not complete, but the showing for last year was so much better than it often has been that the neglect might be passed by without comment if it was certain that all the births that occurred in the city were reported. The physician who exercises great skill and care in bringing a child into the world and then forgets to report the birth needs to be awakened to a realizing sense of his duty. He cannot have in mind the family and property interests that may sometimes hinge on the ability of the child to prove some fact that should be found in the birth certificate, or he would see to it that the record is made promptly.

In the smaller towns where births and deaths are generally known to everyone, it is possible for the town clerk, if he takes an interest in having his records complete, to look after cases for which certificates are not returned by notifying the parents or by reminding the physicians of their neglect, but in the cities and larger towns this is not possible, and it is quite probable that births occur each year that are not reported.

The law provides for the prosecution of physicians whom you know to be delinquent in filing certificates, but while such delinquency is aggravating and causes a good deal of trouble at present, it is not the greater difficulty. It is the neglect to file certificates at all that is liable to work the most hardship, especially later on. If the parents do not take pains to see that birth certificates are on file—and they should not be expected to do so—and the physician neglects to file them, how is the law to reach such a case? No one but the physician knows anything about the matter and he and the parents may be dead before the neglect comes to light, before a copy of the record may be needed.

I am often requested to furnish certified copies of births that occurred in comparatively recent years, of which no record can be found. I have received such requests at least twice during the past year. In one instance the applicant knew the name of the attending physician and I was able to get the date of the birth from him, but no other data; in the other case the parents resided in Rutland but a short time, could not speak English, did not remember the attending physician's name, so I was unable to furnish a copy that was very much needed. I have known physicians to send itemized bills for returning certificates that have never reached my office

Digitized by Google

and I have traced and caused to be recorded several births in this way. I notice that births, deaths and marriages are published in some of the annual reports I receive from cities in other states, especially from the state of New Hampshire. Town and city reports are widely read. It seems to me that the publication of statistics each year by such towns and cities as publish reports, would tend to bring to light any certificates not previously filed and to correct any errors that might appear in the printed record.

Most physicians would improve their certificates if they would give more attention to the spelling of the names in them. Notwithstanding the fact that phonetic spelling has many adherents and that simplified spelling has the President's indorsement, the names in certificates should be spelled the way the persons themselves spell them. Foreign names are troublesome, especially French names, because they are sometimes returned in French and sometimes in English. It is perplexing for the clerk to receive one return with the French surname and another from the same family with the name as spelled in English, especially if it places them under different letters in the index. If the card system of indexing is used and the clerk knows, for instance, that "Courtemanche" and "Shortsleeves" mean the same person, he can place the cards together under the name he thinks will be most familiar to searchers, but if a book index is used it means double indexing or the index will be misleading to a person who does not know the connection between the two names. Physicians who are in the habit of returning foreign names in the original should also give them in English, especially if the persons are more generally known by their English names. In the index in my office is a French name which appears on sixteen cards and it is spelled eight different ways. This is a sample of the old order of things; we are doing better at present.

There are physicians who return certificates with only the initials of the given names of the parties. Such a return is not a proper one, and if it is a certificate of birth an additional information blank should be sent for the given names in full, even if the certificate is properly filled out in other respects. And the lead pencil is still in evidence for filling out certificates notwithstanding the warning on the margin of each blank. In giving the birthplace of the father and mother, something that should never be omitted, it should be remembered that the state in which the town is located is, in a way, as important for the record as the town itself and should always be given; otherwise you have to guess whether Pittsfield, for instance, is located in Vermont, Massachusetts, Maine, or some other state.

I also wish to call attention to the difficulty clerks sometimes have in making out the names of diseases in death certificates. If the health officer is a physician and a good penman, he usually makes plain the name of the disease in the burial permit if it is not plainly written in the certificate, but the health officer is not always a physician nor is he always able to improve upon the physician's handwriting, besides, a good many bodies

Digitized by Google

are taken out of town for burial and for such the clerk has no permit to refer to. In making reports or certified copies the clerk occasionally runs across a cause of death that makes him think that if the disease itself was as puzzling to the physicians as the name of it is to the clerk, it is no wonder that the services of an undertaker were necessary. And yet this disease must be given a name by the clerk, and if the report or certificate is typewritten you can imagine his difficulty.

While I am aware that physicians are usually dependent upon the friends of the deceased or of the newly born child for the greater part of the data for certificates, I am led to believe that they do not always exercise due care in questioning the informants or are not sufficiently insistent upon having all the information possible from them. The item that may seem the least important may be the one most needed for proof some time in the future. Every question is important for statistical purposes and should be answered if possible. I receive on file a good many death certificates which have scarcely any information in the left hand column. I know it is impossible to get more for some of them, but when one of the best known persons in your town or city dies, it seems as if there ought to be someone who could give this information, and that a certificate should not be filed until it is obtained.

One thing more and I will leave the physician. In order that the clerk may carry out the provisions of Act No. 174 of the Laws of 1906, relative to sending certified copies of births, deaths and marriages of non-residents filed in his office, it is necessary that the physician should always give the correct residence of the mother in the birth certificate, and the former or usual residence of the deceased in the death certificate, otherwise this most excellent provision cannot be complied with.

The health officer's connection with the subject in hand consists in making out the burial permits plainly, in insisting that certificates be made as complete as possible, in causing to be corrected any errors he may discover in the death certificates, in making plain the names of diseases if they are not plainly written—which may be easily done if he receives the certificates from the hands of the physicians—and in filing the certificates with the clerk as the law requires. From my observation I should say that the health officer's duties in connection with certificates tend to improve them and make them better adapted to serve their purpose as records. I wish to suggest to the health officers that they discontinue the use of the old style burial permits that do not have the margin for binding, if they have not already done so. Such permits occasionally accompany bodies brought to Rutland for burial. The use of them must be due to neglect, for I am sure the State Board of Health has furnished the new permits to every health officer in the state.

In regard to the duties of town and city clerks, being one of their number and liable to any criticism that may be applied to them, I presume I shall not be able to set forth their shortcomings as effectively as the secre-

Digitized by Google

tary of the State Board of Health might, for no doubt he is troubled more by the clerks not making their semi-annual reports promptly and legibly than the clerks are troubled by the negligence of the physicians.

Much is required of a town clerk. He is expected to be careful and painstaking and should not be trusted with records unless he is so. He should be thoroughly familiar with everything pertaining to the duties of his office, should be competent to make deeds and similar documents and to do other work of a legal character. A clerk should have a legal training in order to fill the office to the satisfaction of everyone, and it is not strange that such as have not had that advantage should sometimes fall short of what is expected of them, but no special training is needed for making reports of births, deaths and marriages to the State Board of Health, and the clerk who fails to make them on time can have no reasonable excuse to offer. He may suspect that physicians are holding back birth certificates and because of this may delay his report until the very limit of the time, but after using his best efforts to get such certificates, when the time comes for completing his report he should send it as the law directs, and not make the secretary's life a burden by delaying his statistical report. If he fails to report promptly, he should not complain if the secretary takes such measures as the law provides for causing him to remember his duties.

Every clerk should realize that in taking charge of the records of his town he becomes the custodian of its most valuable possession. The office of town clerk is one of importance and is worthy the best efforts of any one who accepts it. While it may be accepted primarily for the fees connected with it, the clerk should be willing and expect to do a good deal of work for which he will get no pay, no thanks, even, if he wishes to serve his town in the best possible manner and keep its records to a high degree of efficiency. He should bear in mind that the records of births, deaths and marriages are, comparatively, of as much importance as any records he has to deal with, and that in connection with them delinquencies should be followed up, errors righted and omissions supplied with as much care as he would give to similar work in connection with land records.

It should be taken into consideration that unless the clerk takes a special interest in the subject of vital statistics, his point of view in relation to it is different from that of one who values statistics for statistical purposes, and this may account for any indifference he may seem to show to the necessity of supplying the less important data that may be missing from certificates when filed. Generally speaking, only the leading facts are essential for such copies as the clerk is called upon to make, for usually a copy answers the purpose just as well if the record is not complete as to the minor details as if every question is answered. The value of the less important items, such as the number of child of mother, the birthplace of father, occupation, etc., which are very essential for statistical purposes and which should always be found in the record, is not so apparent to the

Digitized by Google

clerk as to the statistician and possibly he pays less attention than he ought to getting this data.

The town clerk's duties have been simplified by the use of the original certificates and permits for the records. He now has to copy certificates but once instead of twice as heretofore, and it is no longer possible to hold him responsible for errors in the records as he has been held responsible in the past, for it has been my experience that the clerk who makes the record is always censured for any error found in it regardless of the fact that the error might have been in the original document. This relief from responsibility should not cause the clerk to relax his vigilance in connection with certificates; he should not consider his duty done when he files them, but in the interest of complete and correct records, should use every means possible to make them valuable for the purposes for which they are intended, one of which is the making of the statistical report by the State Board of Health, for which *his* report is necessary before it can be completed properly.

Undertakers and sextons have but little to do in connection with burial permits, but their certificates are of value because they are proof that the body reached the place of entombment or burial designated in the permit, and the permit should never be filed without them.

Clergymen and others who perform marriage ceremonies are in a position to add to the efficiency of marriage records by carrying out the provisions of Section 2638, Vermont Statutes, relating to filling out any blanks remaining in the certificates. The expectant groom is called upon to answer more questions than when the old form of certificate was in use, and owing to lack of familiarity with the business of getting a certificate and the agitated condition of mind in which he finds himself, he quite often fails to get all the necessary information beforehand, especially in regard to the expectant bride. He is oftentimes unable to give to the clerk intelligibly the little he does remember. As the clergyman is favored with the presence of the bride—something usually denied the clerk—he ought to be able to get from her such information relating to her part of the certificate as the groom could not furnish and to complete the certificate as far as possible. Certificates returned to my office lead me to believe that clergymen sometimes forget to do this or are not aware that it is a part of their duty.

Notwithstanding the fact that I have found some fault with those who make and record certificates and permits and that there is still opportunity for great improvement in the work of everyone having to do with statistics, I should say that certificates are made more carefully than they ever have been before and that the records are more complete and in much better condition than they were before they were made up of the original certificates and permits. Recent legislation has been in the right direction and I predict it will be some time before any radical change will be made in the prevailing method of handling statistics.

The making of a certificate is in itself such a small affair compared with

Digitized by Google

the event that makes it necessary, that its importance is quite likely to be lost sight of unless constantly kept before us. That this importance might again be suggested to those who make and care for certificates is the reason for my taking your time, not because it was expected that I would present any new ideas.

DISCUSSION.

Discussion of the papers of Dr. Cressey L. Wilbur and City Clerk Whittier by H. L. Stillson, Health Officer of Bennington.

The discussion of "Vital Statistics" to the ordinary mind is on a plane of that of patent office reports. May I hope to escape the same charge, by the large and cultured assembly here present, should a few moments more be added to the interesting remarks of the eminent speaker of the hour, and the auxiliary comments of one of our Vermont officials? We will try it nevertheless.

The keynote of the speakers during this commencement season, from Secretary Taft down, has been to affirm again and again, that the educated man or woman is the leavening force of the community. Surely, if this is true of the world of business, of society, of political life, of the professions, of the media of the arts and sciences, it must be equally as axiomatic in the kingdom of which health officers, schools like this, and statisticians form a part? The lateness of my knowledge that I had been selected to follow the gentlemen preceding, must be my excuse for an independent examination of a portion of this important subject. Two phases only will be noted:—

First, that portion of the Vermont registration statute relating to certificates of death, which may be classified as the geneaological, including the importance of the requirements for births and marriages, as bearing upon the vital interests of the people; and

Second, the classification of diseases.

I may be pardoned if the comments upon my first statement are somewhat dogmatic. Some fourteen years of experience along one line of official endeavor is likely to make any one emphatic,—to become a specialist, so to speak. Only last week I was obliged to write a very unsatisfactory letter to a woman in Michigan, because her grandfather's and great-grandfather's birth was not on record in Bennington. The dates she required were those of the latter part of the eighteenth century, and the early years of the nineteenth. In this connection I quote from my annual report to the town for March, 1906, in which I attempted to educate our people in the words following:—

"A large portion of our population do not appear to apprehend the importance of their prompt and accurate compliance with the law relating to the registration of births, deaths and marriages. With the two first only,

Digitized by Google

this report has to do. Especially essential to every family is the correct statement of the genealogy in the first column of the certificate of death; which, when duly signed, becomes a permanent record in the town clerk's office. These documents, finally, are bound in a book, and are legal evidence of what is stated therein; and yet, frequently, these certificates come to the health officer in so fragmentary a condition that the record is virtually worthless. The mother's maiden name is omitted, her birthplace is blank, the age is 'guessed at,' and the one giving the information does not sign the statement. In the matter of births there is more care taken, but the same necessity exists for accuracy and completeness as in the instances of death. Whenever there occurs any of these events in a family, the first thing to do is to be sure that the *record* is made and filed. The family should realize that, while the law provides that the attending physician shall make these reports, yet doctors are busy people. Even when the doctor leaves the door he may be summoned away for several days, and hence there may be delay. To make the proper record might involve the time which must be given to others critically ill, so the example comes right back to the duty of the citizen to *know* that the record has been made, whenever a death occurs. Why?

"Suppose the question should arise in probate court as to the identity of Frank Jones, of Bennington, Vermont, who claims to be heir to property. It might be essential to show that he was the grandson of Robert Smith of Torquay, England. In these days of emigration and immigration Frank Jones might find it difficult to establish this fact. He would have to show, say, that his mother was married to John Jones, and died in Bennington, Vermont, June 1, 1905, and this is 1920. He goes to the town clerk's office and finds that Clara Jones did die as he expected, but the spaces devoted to identifying her as Clara Smith, born in Torquay, England, are blank. If these documents had been correctly and fully filled, his parents' marriage in Bennington, his birth and the death certificate of his mother would make his descent clear. With the writer's experience in these matters of public records, it is easy to see wherein no establishment of identity was possible, for witnesses die in time, as well as other people.

"This is written to emphasize the importance of families giving their personal attention to the registration of the births, deaths, and marriages which occur within their own households,—do not leave anything to chance; the physician will see to his part in the certificate of death, that of the right hand column, and the town clerk will attend to the marriage licenses. These matters appear to some folks to be annoyances, when in fact everything (even burial permits) are for the protection of the people. Please read the registration statute carefully, and see if you have all done your full duty to your loved ones? If you have not, just ask: 'How can you ever obtain a copy of a record that does not exist, to use in court, or in other pressing matters, however much good it might do you, 20 years hence?' "

Digitized by Google

The above having been written for a town, in this connection, of course, I would have "or city clerk" added in the proper place,—and not appear to slight our friend from Rutland.

An item in the *Free Press*, last week, gives emphasis of what may occur hereafter, and adds evidence of the importance of marriage registration:—

"The older readers of the *Free Press* may be interested in a report that has recently come to the paper, regarding the death last winter in Michigan of an old soldier named Henry Davenport. At his death he left a widow, whose maiden name was Roanah Hilton, and who was married to Mr. Davenport in Burlington some time in October, 1852, by a Methodist minister. His widow being left in straightened circumstances, interested parties set about seeing what could be done regarding the procuring of a pension for her in her old age, and have discovered that the certificate of their marriage has been destroyed. The Rev. G. W. Brown of this city has recently received a letter, asking that the church record be looked up here, but a careful search reveals that no records can be found as far back as 1852, and as the law up to the year 1857 did not require that such records be filed there is no such record in the office of the city clerk. In the letter to Dr. Brown, mention is made of the old Pearl Street hotel, and the letter states that the marriage ceremony was performed at that place by the Rev. Thomas Dodgeson, who was pastor of the Methodist Church in Burlington at that time. There have been several instances in the past few years where a search for records has been made without success. Mrs. Davenport is at present living in the town of Ovid, Mich., and if any resident of this state or city remembers the circumstances of the marriage years ago an affidavit from such a person would be greatly appreciated by her."

Suppose no affidavit acceptable to the government can be found, what then?

Under my "second" subdivision, above, I desire (a) to protest against the too free use of technical terms. Personally, it makes little difference to me whether the cause of death, as reported, is written: "pertussis" or whooping cough; or, "variola" for smallpox; because if I don't know what the disease is or it is misspelled I have five or six lexicons and encyclopædias to which to refer for information; but the ordinary town clerk (and several health officers in Vermont) do not possess these authorities. I quote a skit to illustrate, disclaiming anything derogatory to the medical profession in the allusion. A late periodical said:—

"Time was when the child could express his idea of the world's make-up thus simply:—

"'Little drops of water,
Little grains of sand,
Make the mighty ocean,
And the pleasant land.'

Digitized by Google

"Nowadays, to meet the full requirements of polysyllabic science, he must paraphrase it thus:—

"'Infinitesimal particles of saline humective fluidity,
Minute corpuscles of non-adhering, inorganic matter,
Conjointly cause to exist the unmeasurable expanse of aqueous sections,
And the resplendent superficial area of dry solidity.'"

Within my jurisdiction every physician has been furnished with pamphlets Nos. 101 and 102, published by the Census Bureau, since which time the omissions of a prior period have been greatly reduced. I find, however, this diversity of usage: The younger physicians invariably report as the cause of death the complication first: (to illustrate) chief, "pneumonia"; contributing, "whooping cough," while the older practitioners, equally as often, reverse the terms. This accounts for some of the criticisms made upon returns by the town clerk of Bennington, while a reference to the burial permits undoubtedly would probably correct the errors thus transmitted to the state and to the census office.

Which practice is the correct correlation, and where can the authority be found in terse form to disseminate the information? The medical schools, apparently, teach a diverse terminology on this subject.

Discussion by C. W. Howard.

After listening to the interesting paper of Mr. Wilbur and the discussions that have followed, I find that nearly all of the points have been ably presented. In my remarks I shall only present one or two points, and those in regard to statistics received by the town clerk. I find that many of the birth and death certificates are deficient in answers to certain questions. In the death certificates that of the names of the father and mother are most often omitted, and if the names are given the place of birth is omitted especially of persons over fifty years of age. I would suggest that physicians who have aged persons on their visiting list make an effort to ascertain these facts and make a note of the same for future use and not wait, as is usually the case, until after the death of the person to ascertain these facts. I have practiced this to some extent and find it convenient for supplying deficient data.

As an incentive to do this a suggestion made by Mr. Stillson some three years ago would work well. It was that the fee for a full and complete certificate should be more than for one not complete.

The want of complete statistics is noticed more by the clerk when persons write for copies of records, and they are not to be found. Only last week a lady wrote for copies of the births of her brothers and sisters, and of the seven names sent I could find but four, and these records were since 1860. In the matter of the terms for diseases, a list of the terms with explanations as issued by the census office should be in the hands of every physician and health officer and town clerk in the state, and these terms

Digitized by Google

would in part help the town clerk to decipher the eligibility of the writing on some of the certificates returned.

Discussion by Jasper P. Newton, Benson, Vermont.

There have been some rather loose statements made in the certificates of death. I had a certificate the other day: age 80 years; old age contributing cause; angina pectoris immediate cause. If a man has angina pectoris he must have died from angina pectoris.

I would like to ask Mr. Wilbur if the terms chief and contributing causes of death could not be replaced by direct and remote?

Discussion by A. A. Butterfield.

To show just how valuable these conclusions are, I cite a case where the cause of death was given as heart disease and the contributing cause as sudden death.

Discussion by Jasper P. Newton.

Has the health officer any duty to perform—is he to amend these certificates of death or let them go as they are presented to him?

Answer by Dr. C. S. Caverly, Rutland, Vermont.

The health officer is obliged to get the certificate of death and it is his duty to see that it is as complete as possible before he accepts it. He is authorized distinctly not to accept any vague cause as the cause of death.

Discussion by Mr. Burpee.

When a physician has not been called until the decease, can we get a correct cause of death then?

Answer by Dr. H. D. Holton.

To get the cause of death under such circumstances, the health officer can order a post mortem and should always do so.

Discussion by Mr. Burpee.

The statutes say it belongs to the duties of the first selectman.

Answer by Dr. H. D. Holton.

No. The health officer should do it.

Discussion by Dr. E. E. Ellis, Brookfield, Vermont.

Suppose there were no suspicious circumstances, would you advise the health officer ordering an autopsy?

Answer by Dr. H. D. Holton.

Suppose you had been attending that patient and knew he had organic heart disease. You would expect he was going to die suddenly. You could

Digitized by Google

make out a certificate to that effect. Suppose a man had never employed a physician. He dropped dead. Some say he had heart disease, some say apoplexy. You must make a post mortem to find out the cause of death.

Discussion by Dr. H. H. Swift, Pittsford, Vermont.

I think we all see cases of sudden death or death from more or less uncertain causes where we would not be justified in ordering a post mortem. Shall the health officer look into the case and give the most probable cause of death or put it down as unknown?

Answer by Dr. H. D. Holton.

When you say "probable cause of death" you would be guessing, would n't you? We don't accept any guess work in the classification of these certificates.

Question by J. P. Newton.

The law says no dead body shall be left five hundred feet from the highway; if they do leave them so, can we order them to bury the body just the same as though they were less than five hundred feet?

Question by Dr. E. R. Clark.

I have a rather interesting experience to relate. This experience occurred December 27, 1904. The man was sixty years of age. He had not been feeling particularly well and when he came to town he had promised his wife he would run in to see me. He called at my office that afternoon and I examined him very carefully. After he left my office, he dropped dead in my presence. I gave the cause of death, apoplexy. It was just an accident that man had been examined; he had no disease of the heart so far as I could determine.

Discussion by Dr. E. R. Clark, Castleton, Vermont.

In my estimation, the registration of vital statistics is one of the most important matters that the health officers have to do with. I have undertaken to see that every certificate that I make out, is filled out to the very best of my ability. I realize it is the important factor of our position to do these little things in the very best, possible way. Many times I am asked what is the use of all this fussing. I explain the reason why and the necessity of it. They readily see the benefits which the people are to derive in time to come and they help me to their utmost, I am sure.

As to the correct cause of death. I had a certificate returned to me quite recently with cause of death broncho-pneumonia. The death of a child which occurred at the same time was stated as uremia. I did not find out until a week later that the woman died from puerperal convulsions. What value

Digitized by Google

is a certificate returned in that kind of a way? What I want to know is, is it the duty of the health officer to go about and find out the cause of death?

Closing Discussion by Dr. C. L. Wilbur.

I am very glad to see that so much interest has been taken in the important subject of vital statistics, as shown by the discussions and questions on the papers presented. In regard to Mr. Whittier's statement as to the difficulty of obtaining a complete registration of births, I may say that it is easy to do so if you are determined to secure registration of all births and if the people of the community will support you in this effort. We know that many children die soon after birth. Take your certificates of deaths of infants under one year of age and see if the names so reported were duly recorded as births at the time of their occurence, or as soon thereafter as the law requires. If they have not been, then the law has been violated and prosecutions should follow, of course, after proper warning and notification to all concerned. This will do more toward securing complete registration of births than anything else. Merely voluntary compliance with registration laws has always proved ineffective.

I fully agree with what Mr. Stillson has said in regard to the desirability of using the simplest English terms for stating causes of death upon certificates. They should be precise and only a single term should be employed to designate the same disease. At the recent meeting of the American Medical Association, held at Atlantic City, a committee was authorized on nomenclature, and it may be hoped that that committee may recommend a standard nomenclature of diseases which will serve the same purpose in this country as that which the nomenclature of the Royal College of Physicians of London performs in Great Britain.

As to joint causes of death, how shall certain certificates be classified when two or more causes of death are given? We have no universally accepted rules for the classification of several causes. It is a matter requiring professional decision. A town clerk should not assume the prerogative of deciding as to which term should be copied or omitted from his report to the central office, but should copy every word on the certificate forming a part of the statement of cause of death made by the physician.

Reference was made to the terms "chief," and "contributory," and "direct," "immediate" and "remote" suggested to take their places. I would have no objection to any desirable changes on the forms of certificates of deaths, provided all physicians and registrars would understand them in the same sense. We do not use the word "chief" in the standard certificate of death in its exact form as recommended by the Bureau of the Census. The statement is, "The CAUSE OF DEATH was as follows." Following this is a place for the "Contributory" cause of death. In Indiana some changes have been made. Their blank at present gives first the *immediate* and then the *contributory* cause. In many cases physicians may report

Digitized by Google

that the immediate cause of death was heart failure; the remote or contributory cause would be the disease leading up to that condition.*

The completeness and promptness of registration depend primarily upon the interest and efficiency of the local registrar. A prompt registrar and one who sees that the requirements of the law as to prompt returns from physicians are compiled with, will secure complete returns. Delay inevitably means loss of accuracy and missing records. The local registrar should examine certificates as soon as filed with him, and see that missing items are completed if possible. I thoroughly believe that no fee should be given for imperfect certificates, nor should the local registrar receive a fee for a delayed certificate or one not filled out with all the items required by law, providing that it is possible to obtain them.

In concluding I desire to express my appreciation of the invitation extended by the State Board of Health to address this meeting, and of the courteous attention of the health officers present. It is seven years since I had the pleasure of addressing a similar meeting in this city, and I am glad to recognize in the increased and enthusiastic attendance, the manner in which the Annual Schools of Instruction have commended themselves to the people of Vermont as a most important and necessary part of the sanitary administration.

*Since the meeting at Burlington, I have made a special study of the different forms employed upon certificates of deaths in this country and abroad for the statement of cause of death, which I trust may be submitted to the consideration of the registration officials at an early date through the medium of a census pamphlet.

Digitized by Google

PURIFICATION OF WATER.

GEORGE W. FULLER, C. E., NEW YORK CITY.

I am very glad indeed to be here to-day to speak before the School of Health Officers of Vermont. This school has done and is doing a great deal of practical good in various branches of municipal sanitation. It not only sets forth the theory of the subject, but, what is more important, it provides for the acquirement of practical knowledge on the subject through familiarity with actual applications to various problems which have been worked out elsewhere. The founders of the school should be congratulated upon the success which they have achieved.

I speak these words of appreciation of your work, because I have knowledge of what has been done. When I came to look over the various articles in your Quarterly Bulletin on the subject which I am to speak upon to-day, I found an excellent account of many of the more important filter plants now in successful operation in this country.

Realizing that you have already been well informed as to the main features of this subject, I shall speak to-day upon the subject of water purification, particularly with reference to the new improvements which have recently come up for consideration in this field. I will compare the relative merits of sand and mechanical filters and then I will show you some lantern slides illustrative of a few of the more essential features of recent plants.

Water purification deals with that branch of municipal sanitation by which water supplies are made thoroughly satisfactory, regardless of their source. It deals with ways and means by which the sewage polluted water is freed from disease germs; the muddy water made clear; swampy water made colorless; in other words, the procedures by which a water is made of satisfactory appearance and wholesome quality, so that the public has confidence in it and may drink it with perfect safety.

This subject is a somewhat broader one than that of water filtration. It now includes for some problems, water clarification; in other cases, water decolorization; and in some instances, water softening. Usually there is a combination of features to be dealt with. Rapid progress has been recently made in meeting these varying demands. It can now be stated that purification can now be designed to meet the requirement of practically any problem other than the removal of excessive quantities of salt found in the gas and oil fields.

A few years ago we heard much about water filtration at Lawrence, Mass., where as Mr. Clark has told you, the Massachusetts State Board of Health did much to put this whole subject on a firm footing by conducting an extensive series of tests. The outcome was the establishment of the Lawrence city filter which caused a striking reduction in the amount of

Digitized by Google

typhoid fever in that city, which derives its water supply from the Merrimack River some eight miles below the Lowell sewers. About fifteen years ago the Lawrence work immediately caused rapid progress to be made in the development of water filtration in this country. It was an historical event of much importance. Prior to that time filtration had been confined almost entirely to a few plants, such as those at Poughkeepsie and Hudson, N. Y., which were built some thirty-five years ago under the advice of the late James P. Kirkwood.

The first important step toward water purification in this country was taken some forty years ago when the city of St. Louis sent Mr. Kirkwood, one of the foremost engineers in this country, to make an investigation as to water purification practices in Europe. His report became a classical work upon this subject, both in this country and in Europe, although on account of the excessive muddiness of the Mississippi River water at St. Louis it did not result in that city adopting filtration. Its only immediate effect in this country was the adoption of a few small plants mostly in New York state, as already mentioned.

During the interval between the report of Mr. Kirkwood in 1867 and the investigation of the Massachusetts State Board of Health it must be clearly borne in mind that important developments arose in the field of etiology. The germ theory of disease was developed to a tenable position and it became recognized by sanitarians that impure water supplies were a large factor in the causation of typhoid fever, cholera and other diseases of an intestinal nature.

The experiences of Hamburg and Altona in Germany in 1892, at the time of the severe outbreak of cholera in that section of Europe, gave great impetus to the study of filtration matters. As you doubtless remember Hamburg suffered severely from cholera, while Altona, drawing its public supply from the same river, and below the sewers of Hamburg, was practically immune from this disease, due to the filtration of its water supply. Many instances are on record where typhoid fever death rates before filtration were extremely high, both in American and European cities, and where after filtration, the rates became practically as low as in neighboring cities using ground water supplies; but in no instance was the benefit of filtration so strikingly shown as in the case of Hamburg and Altona. These two cities are solidly built up to their boundary line and it is very significant to note that on the boundary street those people living on the south side and receiving Hamburg water suffered much from cholera, while those residing on the north side of the street and receiving filtered water from the Altona works were free of this disease.

Following developments in Massachusetts, particularly at Lawrence, there are a number of places along the Atlantic seaboard where filtration was adopted for surface water supplies, which comparatively speaking are but slightly muddy. Following Lawrence the most important plant was that at Albany, N. Y., about which you have been told at length.

Digitized by Google

In the south and central west nearly all the surface water supplies carry so much mud for weeks and even months at a time that in spite of the urgent need of adequate purification, the developments in Europe and at Lawrence resulted in no immediate progress. Authorities were afraid to build filters, partly owing to uncertainty as to their efficiency and partly owing to uncertainty as to their cost. Tests on a small scale showed that ordinary sand filters, containing some three to five feet in depth of graded sand supported on gravel underdrains, were incapable of clarifying the water when passing through at anything like the ordinary rate of flow. This rate usually ranges from four to eight inches vertical drop in water level per hour, or about two and five tenths to five million gallons of water per acre daily. This failure in clarification was not the only trouble. It was found that excessive costs would be necessary in order to clean the filters, which means the scraping off of the surface layer of sand and deposit at intervals, cleaning the sand and replacing it. Ordinarily such scrapings are necessary about once a month, but with muddy water they may be several times in a week, making it necessary to have large reserve areas of filters.

It is now conceded that for the muddy water supplies in the Mississippi Basin, sand filters, even when treating water settled for many days or weeks in large reservoirs, are impracticable. This led to important investigations in the Ohio valley at Louisville, Pittsburg and Cincinnati. These investigations, representing an outlay of nearly $200,000, involved the best means of preparing muddy waters for filtration and a comparative study of the merits under local conditions of sand filters and mechanical filters.

Mechanical filters a dozen years ago were crude affairs, having their field of usefulness, for the most part, in industrial establishments where straining of the water was necessary to remove sawdust or other coarse suspended matter. Improvements were gradually made and while these filters had very little standing among waterworks people, it became generally known that when sulphate of alumina or some other coagulant was added to the water, muddy water could be clarified at rates some forty or fifty times as great as in the case of sand filters. At the time the Louisville investigations were begun in 1895, mechanical filters had very little hygienic standing. During those tests it was found, under certain conditions set forth in that report, that economical and efficient results could be obtained. These filters required the sand layer to be of unusual uniformity as to size of grain, and appliances arranged so that they may be washed by applying filtered water to the bottom of the filters, thus removing the impurities by the upward flow of the water, either with of without the aid of agitation to detach the impurities lodged on the sand grains. With a uniform and adequate degree of coagulation of the applied water, these filters will give a removal of bacteria equal to that of sand filters and at a cost materially less, under some local conditions. This result as to efficiency can be secured, however, only when the plants are carefully op-

Digitized by Google

erated, and this means intelligent supervision, about which I shall speak again.

To-day it is the belief of those engaged most actively in the field of water purification that, for muddy waters, mechanical filters are better and cheaper than sand filters; although for a clear water, which is sewage polluted, the sand filters are cheaper and better than mechanical filters. There are, of course, many exceptions to these general rules, due to local conditions. In some cases the smaller amount of head required for sand filters makes them unusually cheap, as compared with mechanical filters, and, on the other hand, there are cases where the small area required for mechanical filters makes their adoption preferable for a water which ordinarily would be treated by sand filters.

The point that I wish particularly to emphasize to-day in regard to these filters is that either one will give satisfactory service if properly built and properly operated. The feeling which was current ten years ago in the East that mechanical filters were of no account, and in the West that sand filters were of no account is found no longer among fair-minded people. Each type of filter has its normal field of usefulness and each can be made to do satisfactory work. Their fields of usefulness are overlapping more and more each year until filter experts, in most cases, are far more insistent on high-grade supervision of the plants, after they have been properly built, than they are as to the type of filter that is adopted.

As health officers it is important for you who may be officially associated with a filter plant, to insist that the plant is well operated. This is essential, in my judgment, and a duty which all health officers should recognize.

It is true that there are a great many poor mechanical filters now in service in this country. A dozen years ago there were very few that were good. To-day there are more good mechanical filters in service than there are good sand filters, if we judge the results by the improvement in the water treated according to analysis. It is true, however, that a mechanical filter will suffer more deterioration in the quality of its effluent than will a sand filter as the results of mismanagement or neglect. Formerly great importance was attached to this factor, but in my opinion, its significance has been overestimated, since I am convinced that all filters should receive careful attention, and that all filter plants for town and city water supplies should be run in conjunction with a laboratory, suitably equipped and manned for obtaining analytical data which will daily show the efficiency of the plant and serve as a guide for getting satisfactory results.

Improvements in the construction of mechanical filter plants combined with their careful operation under laboratory control now enables favorable comparisons to be made of mechanical filters with sand filters, as regards the reduction of typhoid fever death rates in communities following the adoption of sand filters. Such comparisons are afforded by the statistics in the following table.

The filters of the East Jersey Water Company, at Little Falls, N. J.,

Digitized by Google

was the first plant to be built in accordance with the results of the extended investigation made by the cities of the Ohio Valley above mentioned. This plant, of which I shall show various pictures on the screen in a few moments, has a capacity of 32,000,000 gallons for twenty-four hours and was put in service in September, 1902. It is entirely unlike the old mechanical filters with their wooden tubs. These filters are built of concrete with much improved devices for controlling the application of sulphate of alumina to the unfiltered water; with automatic devices for securing a uniform rate of flow through the sand layers; with hydraulically operated valves; and numerous automatic devices for showing various water levels and a gong which rings when the filters require washing. Since that time numerous other mechanical filters, which have been built along similar lines, have been put into service. All of these filter plants are well equipped with laboratory facilities. Among the more prominent mechanical filters now in service are those at Little Falls, N. J.; New Milford, N. J.; Watertown, N. Y.; Harrisburg, Pa.; South Pittsburg, Pa.; Birmingham, Ala., and many smaller plants. Large mechanical filters are now in process of building at Columbus, Ohio; Toledo, Ohio; Cincinnati, Ohio; Louisville, Ky., and New Orleans, La. All of these filter plants will be equipped with adequate laboratory facilities and built upon lines widely different from those of the filters of a decade ago. Their principal features are the automatic control of filter operation and the use of masonry and metal to bring about permanent construction.

Sand filters, as well as mechanical filters, have been materially improved both as regards construction and operation during the past ten years. They, too, are being built with fully equipped arrangements for laboratory control of operations and with improved arrangements for controlling the flow of water through them. Such filters have been recently built at Providence, R. I.; New Haven, Conn.; Philadelphia, Pa.; Washington, D. C.; Indianapolis, Ind., and are under construction at Pittsburg, Pa., and a number of smaller places.

One point has been very clearly learned within the past few years, both with small test filters and in the operation of large sand filter plants. I refer to the fact previously mentioned that sand filters can operate satisfactorily only when the unfiltered water is fairly free from mud. At Philadelphia preliminary filters are in service to remove turbidity from the raw water prior to its filtration. Where the river waters become still more muddy than at Philadelphia, it is necessary either to adopt preliminary filters substantially in the form of mechanical filters or use as coagulant with sedimentation in order to permit the suspended matter in the raw water to be removed before reaching the sand layers. A coagulating treatment is provided or has been recommended for the sand filter plants at Washington, D. C.; Pittsburg, Pa.; Indianapolis, Ind., etc.

One of the most important improvements in sand filtration practice within the last few years has been in the arrangements for cleaning the

Digitized by Google

clogged sand surfaces at a reduced cost. The plant now being planned at Pittsburg, Pa., will have automatic scraping machines so as to do away with hand labor for scraping off the upper inch or so of clogged sand from the surface of the layers. At Yuma, Ariz., there is a device in operation for cleaning sand layers by washing them in place. This arrangement consists of a box held just above the sand surface and which is moved slowly across the sand surface from one end of the bed to the other. Through this box protrude several hollow rake arms with perforations, through which water under pressure is introduced into the sand layers at any desired depth below the surface.

This wash water and the stirring action of the rakes dislodges the impurities from the sand and then the muddy water is removed by a pump having its suction in the box above the rakes.

The city of New York is now actively considering ways and means for the purification of its present supply from the Croton watershed. The Croton water at times contains considerable vegetable stain, although it is ordinarily free from mud. The experimental station at Jerome Park Reservoir, New York City, has been in service for several months in connection with an investigation of a washing machine similar to the one above described for Yuma, Ariz. The use of a coagulant, which experience in the Orient for several thousand years has shown to be perfectly harmless when properly applied, has been studied as an aid to filtration, under certain conditions. Thus it is seen that the improvements now under consideration by filtration engineers give promise to bring nearer and nearer together sand filters and mechanical filters, as these types were originally considered.

In regard to mechanical filters their use has been recommended for several softening projects in the Central West and in the South, where usually the surface waters are not only very muddy, but also very hard. At Columbus, Ohio, and at New Orleans, La., mechanical filter plants are being built as a part of purification works, where the water is to be softened as well as clarified and made of suitable bacterial content. These plants will make use of lime to a great extent and will take advantage of the coagulating power of the magnesia naturally present in the water. It is expected in this way that the use of sulphate of alumina can be done away with for the most part if not entirely.

For fairly clear and soft waters of the East, sulphate of alumina seems to be clearly the most suitable coagulant. For the harder waters of the West and South lime and sulphate of iron seems to be preferable in many cases.

Before we turn to the lantern slides I wish to call to your attention the fact that the great majority of the larger American cities obtaining their water supply from the surface are now either using filters or building filters or are seriously thinking of their adoption. Filter plants now built or building will purify about 40 per cent of the entire volume of water con-

Digitized by Google

sumed in the country from surface sources. Speaking generally the day seems to be not far distant when practically all surface waters in inhabitated districts will be filtered before being used as a public water supply. In Germany this is practically the law of the land and at other places in Europe, particularly in Great Britain, filtration of surface waters is becoming the regular procedure.

Even where there is very little pollution of a water supply stored in large impounding reservoirs where germ life gradually disappears, the use of filtration is being adopted in connection with aerating plants in order to secure water suitably free from objectionable tastes and odors.

As to the thought that copper sulphate or ozone or some other germicide will do away with the necessity of filters on the grounds of hygienic efficiency and lower cost, it is safe to state that filtration will not be displaced by such treatment, although it is undoubtedly true that the broad field of water purification will each year see filters combined with various other treatments which will permit satisfactory results to be obtained with skillful supervision from practically any source of supply.

TYPHOID FEVER DEATH RATES PER 100,000 POPULATION IN CITIES BEFORE AND AFTER ADOPTING MECHANICAL FILTRATION.

Name of City.....	York, Pa.	Lorain, Ohio.	Paterson, N. J.	Binghamton, N. Y.	Watertown, N. Y.
Source of Water Supply.....	Codorus Creek.	Lake Erie.	Passaic River.	Susquehanna River.	Black River.
Date of Installing Filters.....	1899	1897	1903	1903	1904
Fifth Year before Filtration.....	35	53	35	37	101
Fourth Year before Filtration.....	73	133	48	71	44
Third Year before Filtration.....	37	48	28	28	64
Second Year before Filtration.....	25	121	27	43	103
First Year before Filtration.....	88	88	33	56	209
First Year after Filtration.....	79	24	22	30	23
Second Year after Filtration.....	40	21	6	13	27
Third Year after Filtration.....	40	26	14	12	—
Fourth Year after Filtration.....	27	12	5	12	—
Fifth Year after Filtration.....	11	0	—	10	—

Digitized by Google

THE STATE LABORATORY OF HYGIENE AND ITS WORK.

By B. H. Stone, M. D., Director and Pathologist of the Laboratory of Hygiene, Vermont State Board of Health.

The growth of public hygiene or state medicine is a development of the last two decades, although many of the ideas which find embodiment in our modern methods of fighting disease had been germinating for many years previous to this time. The knowledge which led to the phenomenal developments of preventive medicine in these two decades was the epoch-making discovery of Pasteur, Koch, Lister, and their contemporaries of bacteria and the causal relation to the diseases which had been the scourge of the world for so many centuries. Rational methods of fighting these diseases, and that is what sanitation is in its essential, could only come with a correct knowledge of their etiology; with this knowledge the subject becomes an exact science.

Thus we see sanitation was dependent for its very existence on the laboratory, for all of these investigations were worked out there by the tireless efforts of those pioneer scientists. This was the problem of the research laboratory, and splendidly has it been met in the past and ably will its function be fulfilled in the future. We can safely predict that the cause of small pox, syphilis, scarlet fever, measles, whooping cough and the other communicable diseases will be made clear in the near future and that great light will be thrown on the nature, cause and prevention of cancer.

But there is another function of the laboratory which, while perhaps not so spectacular or attractive, is none the less valuable. Almost every discovery in science, every advance in engineering, has contributed some fact or condition of practical interest or importance to general hygiene. These advances in the knowledge of sanitation increase the responsibilities of the sanitarian and the demand for a special training, is constantly growing greater. The ordinary education of a physician is not adequate for the ever-growing problem of sanitation.

The health officer must be prepared to answer questions regarding plumbing which puzzle an expert plumber; questions on ventilation which will stagger an architect; questions regarding water supplies which will baffle a chemist or engineer; and questions on the diagnosis of disease which are beyond the specialist. In fact he must be an expert of experts in all of these and many other lines.

In America, educational opportunities in public hygiene are few and unsatisfactory. Sanitation is allowed only a modicum of time in our medical schools and little or no place in schools of engineering. The University of Ottawa, McGill and the University of Pennsylvania are the only American

Digitized by Google

educational institutions which offer special courses in the subject to-day. The reason for this is partly at least because there are so few lucrative positions which will tempt men to take the long and expensive training required by such a course. When the demand exists, the college will not be found wanting.

In England the country is divided into rural and urban sanitary districts having a population of over fifty thousand. In each of these districts a medical officer of health is elected by a district council appointed by the government. For these positions, no one is eligible unless he be a full graduate of medicine and is the holder of a diploma from some university body in sanitary science, public health, or state medicine. He must not engage in private practice except by special permission from the council. Of course he receives a remuneration in proportion to his training and duties.

In small American communities like these of Vermont, conditions are decidedly different. Here the sanitary officials must be men whose principal vocation is something else and any man who accepts the responsibility of the protection of the public health in such communities must do it at something of a sacrifice to himself. That medical men whose incomes depend upon treating the sick are willing to take these positions and use their efforts in the struggle to eliminate the very diseases upon which their incomes depend is an example of professional philanthropy seen in no other profession or class of men.

Such men cannot be expected to acquire the special training which is involved in all the questions which confront the official. They should not under the present régime be expected to do so. Much can be learned by experience, but unfortunately these positions in Vermont are too much at the mercy of local politics, and political changes are likely to remove a man when he has become most efficient and replace him with an entirely untrained successor.

These are the conditions which call for the establishment of a state laboratory. This makes available for the health officials in the small towns a corps of men of special training to answer some of the perplexing questions which it is difficult or impossible for the general practitioner or health officer to answer. It supplements his work, shares his responsibilities, lightens his tasks and supplies him with the resources needed to make him the equal of the university trained sanitarian. It is simply an application of the business principle of economy in centralization.

Vermont is a state admirably suited for the maintenance and use of such an institution. Her large percentage of small towns and villages, her comparatively small area, her multitude of free mail delivery routes and the average high intelligence of her population all go to render the need of a centralized laboratory great and the possibility of its success large.

It would be hard to estimate in dollars and cents or in human lives, the boon which was conferred upon this state by the work of that enthusiast,

Digitized by Google

Dr. Jo H. Linsley, for none can doubt that it was largely due to his unquenchable enthusiasm, his boundless energy and his herculean efforts that the Green Mountain State was almost the first in the Union to have a state laboratory, and only those who stood nearest to him will ever know how much of his life he put into the fight for this institution or against how much opposition or, harder yet, inertia of indifference he fought.

He early foresaw the tremendous significance to sanitation of bacteriology and appreciated the technical problem which must be answered by the state sanitary officials and realized the impossibility of answering some of these without laboratory resources.

The laboratory is an institution established to aid and supplement, never to replace your work, and should be so regarded by you. It behooves you to meet it half way. In sending specimens for examination, you should furnish all the possible information tending to throw light upon the results. The laboratory worker needs this if he is to form any opinion on the results of his examination. You should never withhold information or give misleading statements if you honestly wish assistance. If you ask aid in this spirit, you may rest assured that such assistance will be given you if it is possible. But the limitation of a laboratory should be appreciated by you. Laboratory methods are not supreme and oftentimes the best that can be furnished you is a simple statement of the findings, leaving the conclusions entirely to you. Your interpretation would, other things being equal, always have greater weight for you, in addition to all the facts which the laboratory man can furnish, have a knowledge of the other factors in the case which is denied him. Negative results should always be given less weight than positive ones. If you are at all conversant with methods of laboratory work, you will immediately appreciate that many things may work together to cause a failure of positive findings. But positive results, if on the other hand these are obtained, are practically conclusive. You should never be offended if the laboratory refuses to give you a diagnosis of your case, for it is often the part of honesty for the analyst to say frankly that such a diagnosis is impossible from his standpoint. It stands to reason that a diagnosis based on the combined results of his examination of the specimen and your examination of the patient is of much greater weight than the opinion of either of you without the knowledge possessed by the other. Never rely on laboratory examinations of the secretions from, to the exclusion of physical examination of, your patient. True, your opinion from such an examination may be entirely reversed by the laboratory results, but it never can fail to be of value.

I need not tire you with long statistics to show what this institution has done in the past. These have been published in our annual reports, but I will venture to lay before you a bare outline of the growth of the work during the first nine years of the institution's existence: 2,726 specimens were examined the first year; 5,920 during 1906; and 4,721 during the first six months of 1907, an increase of something over 300 per cent in the

Digitized by Google

annual number of examinations. These figures fail to do justice to the actual increase in the work, for a large part of the increase in the last years has been in the longer and more expensive chemical examinations.

Based upon the money value of the work, which measure in a rough way the time required for these examinations, we find that in 1898 work valued at $14,775 was done in the twelve months, while in the first six months of 1907 the work done, at the same valuation, amounts to $23,770.50. These valuations are based upon the very lowest prices at which work is done in private laboratories in adjacent cities and do not include the testimony of the expert in criminal cases which have been investigated here.

Our laboratory, established as an adjunct to the State Board of Health for the investigation of sanitary matters, has been given new work by nearly every legislature since its beginnings. The session of 1900 added an important department in opening the laboratory for chemical and pathological examinations in state criminal cases, thus placing its resources at the service of the courts. The Local Option Law passed by the legislature of 1902 made it the duty of the license commissioners to collect and have analyzed at the laboratory, specimens of liquor from the licensees. The session of 1904 added the Pure Food Law and all the work implied therein, and the last legislature has made it obligatory for all wholesale dealers supplying Vermont retail liquor sellers, to have their products examined at the state laboratory. The same legislature gave to the state pathologist, the duty of performing the autopsies in cases of suspicious death. Thus at the present time, the work of the laboratory comprises the examination of cultures from suspected diphtheria cases, blood from suspected typhoid and malaria cases, sputum and other excretions for evidence of tuberculosis and, in short, specimens from any suspected infectious or contagious disease, water for its purity, milk and all other food products, liquor from license commissioners and from wholesalers desiring licenses, and any sort of material from criminals cases in which a chemical, miscroscopical or pathological examination is desired by the prosecuting officer. In addition to this a laboratory official performs the autopsies in all criminal cases requiring such an examination. Furthermore, in any such case coming to court, the pathologist and chemist making the examination are at the service of the state as witnesses.

All of these lines of work are of great value to the people of the state and their relegation to a central laboratory was a good business measure. It may be safely asserted that in no other state in the United States is such an economical and efficient system in operation. Certainly no other laboratory is doing the variety of work that ours is. All of these new departments have added very materially to the work of the institution and these additions, we regret to say, have been out of proportion to the increase in the appropriation for running expenses.

In 1900 $12,000 was estimated as being necessary to meet the expenses of the work then being done. The legislature of that year made an annual

Digitized by Google

appropriation of $10,000 at the same time adding the medico-legal work which necessitated the employment of another chemist. Since then an additional $2,500 has been made available to carry into effect the provisions of the Pure Food Law. Thus the original $8,000 has been increased 55 per cent, while the amount of work done has been multiplied during the same time over 300 per cent.

With the annual appropriation of $12,500, the running expenses of the institution, including the salaries of the laboratory staff (seven members), the supplies, the expense of the quarterly bulletin, the School for Health Officers, the traveling expenses of the food inspector and the purchase price of the foods examined must be paid.

What the institution needs now more than anything else is a building. The rooms which are now occupied, while they have served our purposes in the past, are being outgrown. They never were ideal for the purposes of a laboratory. Such a building should be well supplied with light, should be free from all tendency to settle and protected as far as possible from street jarring. None of these particulars are satisfied by the present location. The amount paid for rent, while reasonable, would go a long way toward paying the interest on the investment for a building embodying all these qualities. It may never seem advisable to ask for such an appropriation, however. This state is small and we realize that it has dealt generously with us in the past, yet this has been a good investment for the state and it can afford to continue the liberal treatment. Whether or not it may be deemed wise to ask for further aid, I wish you all to know what we need, and at some future day when it does seem proper to ask for such a building, we trust that you will all be disposed to lend your aid.

This institution is only a part of the great sanitary system of the state of which you are and always will be the most essential element, but it is, I think you will all agree, an important part. The tremendous significance of preventive medicine is being appreciated more every day. Intelligent people all over the world are coming to see that a state can use its resources in no more profitable manner than in the protection of the lives and health of its citizens. In this cause it should always be generous. To you, sanitary officials of the state, is given a responsibility than which there can be no higher. You should and surely will heartily support anything which can aid you and make your responsibility a little lighter and your service more efficient.

Digitized by Google

DUTIES OF HEALTH OFFICERS.

By Henry D. Holton, M. D., Secretary of the Board.

Gentlemen:—

It gives me great pleasure to meet so many of the local co-workers in our great philanthropic work of keeping our state and its citizens in the front ranks of a clean sanitary people. I wonder how many of you appreciate what your position is, in fact, who you are and what the people of your towns have a right to expect of you. Do you daily live up to what is expected of you? In the discharge of the duties required of you in this most honorable office are you meeting the expectations had when you were selected? On a previous occasion I expressed the opinion that a successful health officer must be endowed with a philanthropic spirit, a love for his fellow men that prompts him to give the glad hand to help on in time of trouble and, while of necessity he must be paid the fees established by law, this compensation is, in his mind, of minor importance.

The duties imposed by law upon local health officers are in Section 11 to and including Section 21 of Act 113 of Laws of 1902, with amendments, with such additional duties as are imposed upon them by the rules and regulations promulgated by the State Board. You should make yourself familiar with the laws and these regulations, also with Act 140 of 1904 relating to vital statistics. This latter act you should be able to explain to the physician and often call his attention to its provisions, especially relative to a plain, concise statement of the cause of death. If the cause of death given is such that it cannot be properly classified, you should require the attending physician to give a more correct statement of the cause of death before you grant a burial permit; as, in suicide, it should give the means used; if drowned, was it suicidal, accidental, or otherwise; fracture of skull, cause of fracture, so it can be properly classified under accident by horse power, steam power, or whatever the cause; heart failure, want of breath, cause of such failure or difficulty of breathing; shock, what led up to the shock; if from an operation, state character of the operation. Ask that the certificate be filled out in a plain, legible handwriting and every question answered.

A careful reading of various sections will plainly indicate to you that you are secretary and executive officer of the local board of health, consisting of the selectmen and the health officer. Over and over, in different sections, it is stated that, as secretary of the local board, you should perform certain acts, or that the local board shall have power and authority to perform certain acts, or that the secretary, by a written instrument, shall, as directed by the local board of health, make such order. Not only your

Digitized by Google

quarantine notice should be in writing, but all notices, of whatever character, should be in writing. A sheriff, or constable, would not think of giving a verbal notice, as an officer, to anyone, but always in writing.

While physicians may telephone you of cases of communicable diseases and you will act on such information, they must confirm such information by filling out a blank and transmitting it to you. You should be sure to keep all physicians practicing in your town supplied with such circulars as they require to make prompt reports to you. You will notice that certain sections authorize the State Board to close schools, churches, shut up highways. As local health officers you cannot legally issue such orders except by direction of the State Board. The sub-sections of Section 15 of Number 113 of Laws of 1902 give the local board the greater part of its authority. If the selectmen do not wish to be troubled with constant calls to meet they can, if they have confidence in your judgment, pass a resolution authorizing you to abate nuisances and to perform such other duties as may be necessary. This leads me to suggest that a record book should be procured in which a record of all meetings, the actions taken and orders promulgated, may be kept; thus all authority given you to act for the local board would be on record.

You should take pains on all proper occasions to inform the people that you are required by law to perform these various duties; that it is not a matter of choice on your part, but a mandate of the law which, if neglected, subjects you to a penalty; that they also are required to do certain things which, if they neglect to do, brings them under condemnation of the same law. If necessary, call the attention of the physicians to the fact that it does not require that they be *sure* that a case is one of a communicable disease; if they only "suspect" it becomes their duty to report at once such case to you.

Be prompt in your reports to the secretary as the law requires. When he writes you for any cause, do not wait for a second letter, but answer his letter by return mail. Do not wait for a report from the attending physician before you report to the secretary, but, if rumor says that a case of any communicable disease exists in any place in your town, at once investigate so far as to satisfy yourself if such is a fact, then act accordingly. The same holds true if any nuisance exists. If it has not been reported or complained of learn for yourself and, by the direction of your board, take such action as will abate it.

Cases of communicable diseases occur of a very mild type; parents will say, "They are not sick," and very likely will be angry if you quarantine. The law does not give you any latitude in these cases. *All* cases are to be quarantined. *You must obey the law.*

In case it is reported by teacher or parent that certain pupils are suffering from itch, or have lice, take measures at once to ascertain the correctness of this statement and, if found true, direct that such pupils be at once sent home. Notify their parents or guardians in writing that such pupils cannot

Digitized by Google

attend school nor go from home until they are freed from these conditions; also send written notice to school directors of the reason why such pupils are prohibited from attending school.

Keep in mind that the laboratory was established and is conducted to aid in the diagnosis of various diseases; that no case of diphtheria should be discharged from quarantine until two examinations of cultures have been made and reported negative, these cultures having been taken at least three days apart.

DISCUSSION.

Dr. H. H. Seely, Richmond.

When I discovered that this paper was to be presented by our secretary, Dr. Holton, I felt that no discussion would be necessary. However, I had promised to take up the discussion and will therefore consider one phase of it—the health officer's duty as an educator.

It was only a little while ago that the public looked upon the health officer as one to whom complaints of nuisances should be brought by word of mouth, and that done their whole duty was done. To-day the people are beginning to realize that they themselves have responsibilities in these matters.

My experience has taught me that unless public sentiment is with the health officer he can do but little real good to the community, and to have public sentiment with him he must have an intelligent public back of him. So it becomes to his advantage to educate the people in sanitary matters on every possible occasion. Especially in the case of tubercular patients is there need of greater knowledge for safeguarding the life of the patient and those living with him. For years back in our health officers' meetings we ourselves have been constantly taught the absolute necessity for pure air, especially in treating these cases—that it is one of the greatest means to recovery. The tubercular patient, and especially his friends, have the right to have this fact placed before them in its true value. Teach them the great value of pure air and sunlight, since the thought uppermost in their mind is that the patient will certainly take cold should the windows be opened. I find it best to go to the sleeping room and show just what I mean, and then be on my guard lest some visitor to that house does not undo all the good that has been done. I use the words, "windows be opened," because as yet in many of our country districts most of the people do not take kindly to the idea of outdoor treatment for tuberculosis. It is safe to say that for six months of the year fifty per cent of the people in this section keep their sleeping room windows closed to keep out the cold air and during a part of the remainder of the year the curtains in these rooms are drawn to keep out the hot sunlight. Teach to those in health what sunlight and air will do; that they are disinfectants; that they will destroy many foul odors; that damp, unwholesome places can be made healthy by letting these vitalizing agents in; that without them a sleeping or living room soon becomes a source of

Digitized by Google

trouble. Teach the importance of disinfecting the excreta from typhoid patients. Show how the health of the entire community may be imperiled through carelessness in this matter; how this may also affect communities miles away. Teach what it means to keep a quarantine; that a quarantine is for the protection of all. Show the true dangers during epidemics and how to avoid them, but at the same time expose the groundless cause for panic. I remember a case of diphtheria in our town. I happened to be the attending physician and seldom did I get away from that house without being hailed by a panic-stricken neighbor. As she expressed it, she was "all torn to pieces." She questioned me as to whether it was safe for her to hang out her wash; whether the children could safely pass the house on their way to school, and finally whether it was safe to eat the eggs laid by her own hens in her own hen house. Here certainly was a chance for giving a little instruction regarding the care of the family during threatened epidemics of contagious diseases.

Teach to parents and pupils the value of sanitary and beautiful schoolhouses. With many, school days are the formative period for life. Impress upon those in charge the fact that sanitary schoolhouses are needed for the best development of the body; that neat and beautiful buildings are not only healthier but also tend to develop the higher ideals of decency and order.

The State Board issues pamphlets for the public that are of real value, but most of the people will not read them. To illustrate—once when I wished several copies of a bulletin which had been recently issued I watched the post office waste basket and picked out all that I wanted. That so many of these pamphlets are thrown away is no reflection on the State Board, but it does emphasize the fact that the education of the people on sanitary matters rests much upon the health officer and physician, for what the people will notice is the verbal instruction of one whom they know personally.

Discussion by S. W. Butterfield, Weathersfield, Vt.

I am in a bad position, you will see; I am asked to discuss a subject which has been presented to you by a gentleman who knows everything regarding the duties of health officers and as he has gone over this subject so thoroughly, I have little hope of interesting you by anything which I may relate.

I feel a little like a darkey in an adjoining town. He was asked one day if he did n't know anything; his answer was, "How can I, when you know everything?" So is the case with me—there is nothing left for me when you know it all.

I will relate a little of my experience with a case of disinfection. I had a case of tuberculosis. The man died. The first selectman of my town telephoned asking me if he could not do the disinfecting. I said "Yes, and all I ask is that it be done thoroughly." He said he would do it thoroughly. Quite a long time after this he telephoned me asking, "How long shall I

Digitized by Google

keep the rooms closed?" I said: "What are you doing?" He said: "Burning sulphur in the room." As you well know this is not disinfection to-day, but I learned one lesson and that is if you have any business as health officer to perform, *do it yourself*. Another man will not do it satisfactorily. If Miles Standish had done his own courting, he would have succeeded better than he did by turning it over to John Alden.

I have had a little trouble with burial permits. I have been health officer for three years. Bodies used to be brought into our town from outside and buried. I would learn through the press that a person died Tuesday and was buried in my town on Friday. I called up the sexton and asked him regarding such a case, and he said, "Yes, I buried that body." I asked him what authority he had for burying that body without a permit from me for the doing of the same. He said the undertaker said the transit permit was all that was necessary, so he took the word of the undertaker. I called his attention to Section 9 of Number 140, Laws of 1904, which says, "Any person or persons, desirous of disinterring or removing the body of a human being from one cemetery to another, or from one part of a cemetery to another part of the same cemetery, or from a tomb or receiving vault, elsewhere, shall first obtain a written permit from the health officer, if there be one, otherwise from a majority of the local board of health of the town or city where such dead body is to be buried or entombed." If he does otherwise than observe this law he shall be imprisoned not more than fifteen years and not less than one year, or fined not more than $2,000, and not less than $100, or both. I received a very humble answer, saying that he would see that it never occurred again. He must send me his certificate so that it will get into the town records straight.

I was rather pleased to hear the secretary speak of a disease which is universally cured with sulphur and lard, and also the other disease which is found running in the hair. I feel these should be regarded as communicable diseases. I had a notice or complaint that one family was affected with one of these diseases. We have n't a doctor in our town so I telephoned to Springfield and asked to have one of the doctors there come up and treat this family, cure the disease and send in his bill to the overseer of the poor. He did it. I don't know whether I exceeded my limits or not. But I concluded that such was the shortest way to do it.

You will meet some man who has a spite against his neighbor and he will send you a notice that will make trouble there. I don't think it does to have a man who has a pepper disposition for health officer. Be cool; be calm. You will have lots of fault found with you. But don't get excited over it. Investigate every case which is reported to you and then proceed with it to the best of your ability and according to the law laid down for you by this worthy board. But you will find many cases where you will have to use that wonderful quality called common sense.

Years ago when barometers were first in use two men, farmers and

Digitized by Google

brothers, bought each one of these instruments to determine the weather. The barometers indicated foul weather so the first farmer decided he would not do any haying that day. The other barometer indicated foul weather, but the owner of this instrument decided he would start in and work until the foul weather arrived. The result was one man was idle all the week waiting for the foul weather which never came, while the other had performed his duties disregarding the indications displayed by his barometer, and did a good week's work haying. Saturday night this man went over to see his brother and find out why he had done no haying. His answer was that his barometer indicated foul weather. "Ah," says the other, "you will have to use a little common sense with your barometer." So *you* will find many times that with your barometer, the health laws, you will need to use a "little common sense."

I would say a word about the sanitation of schoolhouses. In my town, when I took up the office of health officer, the condition of these buildings was very bad. This was especially true of the outbuildings. I presume this condition prevails in a great many of the outlying towns throughout the State of Vermont. I made a report of their condition at the March meeting. It was the first report which had been rendered. I recommended changes at once. The towns are going to find fault with the expense of the work, but if you go at it in the right spirit, you will succeed in getting the town to help you. I read my report and then they asked me to have my report printed in the town report the next year so that it could be known through the town what was the exact condition of the schoolhouses. I passed my report in in time but it was never printed, so I asked the auditors why they had failed to print my report when the town had voted to have it done. They replied that it would have gone all over the state and everybody would know the condition of their schoolhouses. This, certainly, was an easy way of putting the schoolhouses in a good sanitary condition. In only one out of nine is there running water. In some schoolhouses ten or fifteen rods of piping is all that would be needed. When I visited one school where there was no running water, I asked one of the little boys where they got their water to drink. He said, "Oh, we melt snow." I pleaded with the school directors asking them if they would not try to have running water at one schoolhouse each year and in a short time they would have running water in all of their schoolhouses. In one school room there was a washdish on the stove with some snow in it to melt. I asked a little girl who was standing nearby what she was doing. Her answer was, "I'm going to wash my hands before school begins if I can get this snow melted." I found at every schoolhouse in town on every outbuilding and fence and, in fact, all places which children frequent, writings and carvings, obscene and disgraceful to any community. I presume you have all met with the same experience. Now, gentlemen, try to stop such things. If there is anything that we can do to make the minds of our children pure and clean, let us do it. It is a

Digitized by Google

grand thing to send out from these schoolhouses children with a perfect physique. It is a grand thing for Vermont in the coming days when they shall stand in the positions occupied by men of to-day. The sanitation of the schoolhouse and its surroundings, that shall insure to the boys and girls who so soon will take their places to aid in the great world's work perfect health, is a great thing, but the sanitation of their morals is infinitely greater.

Dr. G. F. B. Willard, Vergennes.

In the town of Ferrisburg, where Mr. Frisbie is the health officer, there came up two cases of scarlet fever that were under my charge. Instead of writing Dr. Holton about them, the school committee were advised to close the school, which they did. If that committee saw fit to close the school, wouldn't it be just as well as to have Dr. Holton do it?

Dr. Henry D. Holton.

The school directors of a town can control their schools, opening and closing them without any reference to the health authorities, but when it comes to a question of closing a school in times of epidemic disease or serious sickness, the local health officer can issue such order *only* under the direction of the State Board of Health. (See last part of Sec. 11 of No. 113, of 1902.) I do not call your attention to this because the State Board is anxious to exercise any authority, but in order that you may keep strictly within the law. If some patron of the school should object to its being closed, and it had been closed by your order, illegally issued, you, as local health officer, might find yourself, to say the least, involved in unfortunate circumstances. In all matters it is necessary that health officers, state and local, should keep well within the provisions of the law.

Dr. G. F. B. Willard, Vergennes.

The parents agreed with the school directors that the schools should be closed when the pupils have been exposed. They have made a fuss about a few lice and some itch.

Dr. W. L. Havens, Chester Depot.

My name is Havens. I am the marasmus man and I think I look it.

I find that many towns which are not represented at the Health Officers' School of the state crib from neighboring towns. Many times towns which fail to send representatives to these meetings, and thus fail to furnish proper instruction to their own health officer, in the emergencies which arise expect health officers who have qualified at the expense of adjoining towns to furnish instruction or do work which their own health officer should be qualified to perform. While it is manifestly unfair for a town to crib from another town which pays from twenty to thirty dollars annually for instruction of its health officer, the real unfairness and real injustice is not to the latter town, but to the citizens of the former who,

Digitized by Google

through the short-sighted economy of an official board, are permitted to suffer from incompetency in the administration of their health affairs. Every health officer in the state of Vermont should assert his right to instruction at the Health Officers' School and should attend the sessions with eyes and ears wide open all the time and with mouth open when he has a pertinent question or helpful suggestion to present.

Often I am in doubt how to dispose of transit permits which accompany bodies brought from other states. For example, a body was recently brought from a town in Massachusetts to Chester, Vt., the town in which I am health officer. The only paper that came into my possession in that case was a transit permit which contained answers to only a few of the questions which were asked on the permit and which are also asked in the regular burial permit of Vermont. What are we to do with an incomplete permit like that? Shall we accept it, fill as much of our burial permit as possible from the facts presented, and allow interment of the body, or shall we insist upon additional facts before we issue a burial permit? We have only a few questions on our burial permit and all are important. Shall we accept a transit permit which omits any of these important questions, which does not state the full name, age, disease causing death, or name of medical attendant, and necessarily omit them from our burial permit, or shall we refuse to accept such a permit and withhold our burial permit until the essential facts are forthcoming?

Discussion closed by Dr. Henry D. Holton.

In answering Mr. Butterfield's question regarding the sending of the bill for the care of the case of lice and itch to the overseer of the poor, I would say, the bill should have been sent to you and gone in in connection with the health department. It should not go into the poor account. It might be considered a disgrace for a family to receive aid in this manner from the town.

Regarding the removal permit that was issued upon a transit permit, I would say that the transit permit should have on it the cause of death. The permit should be issued before the body is buried.

The sexton who buries a body without a permit has his neck in a halter, and it ought to be drawn a little tighter together so that he would remember the next time he has occasion to perform any duties connected with his office.

When you hear that a family have lice and are infecting others, investigate the case. If you are a physician, go to see if such is really the case. When it is seen, send a written notice to the parents that their children cannot go to school until they are cleaned up. Send a written report to the board of school directors, stating they are sent away from school on account of the trouble. The board of school directors has the power to make all school children attend school, and it is your business to see that

Digitized by Google

this board has a copy of the report which you make, prohibiting the children from going to school; and also state you will notify them when they are in a condition to return.

Regarding the animal killed by the humane agent. The party who places an animal there, should pay the expense of burying it if they are able to. Sometimes such things occur in a family where it is impossible to get your pay. In such a case, the health officer should see that it is done. He can, of course, charge it up in his bill.

Now about this cough. This Board has issued circulars for teachers in schools. They are in the hands of the state superintendent of education and are to be placed in all schoolhouses. When a teacher's attention is called to a child coughing, she should send the child home and notify the parent at once the cause of the dismissal. It may be whooping cough, measles, or influenza. That child is not in proper condition to do its school work and should be sent home until it is better.

With regard to the health officer being notified that an animal has died or was killed for meat and has been found to be infected. That comes under the pure food law. The health officers are inspectors and they have the right to order the destruction of meat that is not wholesome. If you have any doubt concerning the food, send a sample of the material to the State Laboratory of Hygiene, so you may know what to do with it.

In Indiana they do not run any risk regarding meat. If they find a carcass which is not considered good for food, they turn kerosene over it.

With regard to the death certificate of pneumonia and heart failure. There are two causes—immediate cause and contributory cause. If they have pneumonia, they may have heart failure. But when only heart failure is given, one would ask, What led up to heart failure? Pneumonia. That is the answer—the remote cause and the immediate cause should always be given.

Dr. H. W. Bacon, Eden.

What I wish to ask is, do you classify lice as a contagious disease?

Dr. Henry D. Holton.

It is a communicable disease.

Digitized by Google

STATE LABORATORY STATISTICS.

The Following Examinations other than Milk have been Made at the Laboratory from August 10, 1907, to November 10, 1907.

	Total.	Positive.	Negative.
Typhoid Fever	167	57	110
Tuberculosis	313	99	214
Diphtheria	487	159	328
Malaria	6	—	6
		Polluted.	Normal.
Waters (ground)	158	125	33
Waters (surface)	55	16	39
		Illegal.	Legal.
Miscellaneous Foods	39	11	28
Miscellaneous Drugs	37	24	13
Non-Alcoholic Beverages	49	42	7
		Illegal.	Legal.
Liquors	92	26	66
		Positive.	Negative.
Miscellaneous Examinations	49	15	34
Medico-Legal Examinations.	25	23	2
Autopsies	5		

Digitized by Google

MILK BELOW STANDARD EXAMINED FROM AUGUST 10 TO NOVEMBER 10, 1907

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
50789	8-11-07	Frank O'Brien.....	Cuttingsville	12.71	8.71	4.	Normal	Dirty
50790	"	T. G Jones.....	"	12.71	8.71	4.	"	"
50791	"	T. L. Davis.....	"	12.58	8.98	3.6	"	"
50792	"	Hannah Riley.....	"	10.66	7.6	3.0	"	Dirty; watered
51345	9- 6-07	Mrs. F. S. Collins..	Burlington	12.91	8.51	4.4	"	Bacteria 192000; Dirty
51346	"	J. E. Maynard.....	"	13.28	8.68	4.6	"	" 156000
51348	"	Baker & Tupper...	"	12.32	8.52	3.8	"	" 144000; Dirty
51352	"	Thos. Ryan.....	"	13.52	8.72	4.8	"	" 192000 "
51353	"	O. E. Reynolds....	"	12.44	8.54	3.9	"	" 120000
51354	"	F. X. Saltus.....	"	12.92	8.62	4.3	"	" 173000; Dirty
51355	"	O. E. Barber.....	"	13.01	8.74	4.3	"	" 120000
51358	"	J. G. G. Downing..	"	13.28	8.68	4.6	"	" 325000; Dirty
51362	"	F. X. Bordo.....	"	12.93	8.83	4.1	"	" 162000 "
51364	"	F. L. Murray.....	"	12.20	8.50	3.7	"	" 110000 "
51365	"	Dennis Bourne....	"	12.47	8.77	3.7	"	" 102000 "
51373	"	O. Mungeon & Son.	"	12.56	8.56	4.0	"	" 365000 "
51513	9-10-07	L. A. Macrae.....	Winooski	13.16	8.56	4.5	"	Dirty; submitted
51772	9-26-07	H. J. Novak.....	Rutland	12.80	8.6	4.2	"	Dirty
51780	"	J. P. Young.....	"	12.80	8.6	4.2	"	"
51781	"	L. E. Lord.....	"	12.61	8.81	3.8	"	"
51782	"	J C. Burton.....	"	12.69	8.7	3.9	"	"
51787	"	J. A. Mead.....	"	11.12	8.5	2.6	"	Low in total solids and fat
51789	"	Chas. Phillips.....	"	.....	....	8.	"	Dirty
51848	9-30-07	L. Alfred.....	Burlington	23.05	8.85	4.2	"	"
52115	10-12-07	Horace Dyer.....	Rutland	13.52	8.72	4.8	"	"
52116	"	"	"	12.92	8.72	4.2	"	"
52226	10-15-07	H. H. Winchester..	Brattleboro	14.27	9.27	5.0	"	"
52227	"	E. M. Whitney.....	"	13.18	8 88	4.3	"	"
52228	"	A. H. Jaquith.....	"	13.60	9.00	4.6	"	"
52229	"	C. A. Barber.....	"	13.98	8.79	5.1	"	"
52233	"	J. L. Grover.....	"	13.40	8.80	4.6	"	"
52235	"	L. A. Howard.....	"	.....	....	8.2	"	"
52236	"	A. E. Torrey.....	"	.....	....	6.6	"	"
52260	10-19-07	C. J. Gould.....	Woodstock	14.03	9.23	4.8	"	"
52431	10-24-07	C. C. Winchester..	Brattleboro	12 92	8.62	4.3	"	"
52430	"	C. L. Stacy.....	"	14.08	9.68	4.4	"	"
52432	"	E. E. Mather.....	"	13.22	9.72	3 5	"	"
52433	"	J. A. Hadley.....	"	13.88	8.88	5.0	"	"
52415	"	Thos. Ryan.....	Burlington	14.01	8.81	5.2	"	Bacteria 46000; Dirty
52418	"	Mrs. F. X. Saltus..	"	13.52	8.81	4.7	"	" 88000 "
52119	"	Dennis Bourne.....	"	13.54	9.04	4.5	"	" 48000 "
52420	"	I. E. Chase.....	"	14.01	8.81	5.2	"	" 84000 "
52594	11- 4-07	Elmer Elwell.....	Bennington	11.50	8.70	2.8	"	Low in total solids and fat
52599	"	W. J. HIcks.....	"	11.94	8.14	3.8	"	Low in solids not fat Dirty
52600	"	"	"	12.66	8.16	4.5	"	Low in solids not fat
52606	"	Philip Jacobs.....	"	12.31	8.31	4.0	"	" " " " " " Dirty
25607	"	John Sculley.....	"	13.64	8.84	4.8	"	Dirty
52609	"	F. A. Greenslet....	"	13.14	8.24	4.9	"	Low in solids not fat
52610	"	John Olin.....	"	11.00	8.50	2.5	"	Low in total solids and fat
52576	"	O. E. Barber.....	Burlington	12.92	8.72	4.2	"	Bacteria 200000; Dirty
52579	"	M. D. Perleman....	"	13.76	8.76	5.0	"	" 350000 "

Total below Standard, 51

Digitized by Google

MILK ABOVE STANDARD EXAMINED FROM AUGUST 10 TO NOVEMBER 10, 1907

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
50875	8-13-07	Condensed Milk Co....	Richmond	13.52	8.72	4.8	Normal	.....
50876	"	" ...	"	13.16	8.76	4.4	"	.....
50877	"	" ...	"	13.78	8.98	4.8	"	.....
50947	8-19-07	A. B. Ashley.....	Milton	13.00	9.00	4.0	"	.....
51078	8-27-07	Post Hospital.....	Ft. Ethan Allen	12.51	8.70	3.8	"	.....
51210	8-30-07	W. S. Clark.....	St. Albans	12 93	8.83	4.1	"	.....
51211	"	J. Campbell.....	"	13.42	8.92	4.5	"	.....
51212	"	J. N. Warner	"	12.21	8.11	3.5	"	.....
51213	"	F. O. Jackson.....	"	12.33	8.73	3.6	"	.....
51344	9- 6-07	H. A Bixby	Burlington	12.92	8.62	4.3	"	Bacteria 78000 per c.c.
51347	"	H. B. Chittenden & Son	"	12.80	8.60	4.2	"	" 16000 "
51349	"	H. H. Wheeler.....	"	13.52	9.72	4.8	"	" 48000 "
51350	"	C. C. Bliss	"	12.44	8.54	3.9	"	" 24000 "
51351	"	D. J. Millham & Son ..	"	13.52	8.72	4.8	"	" 68800 "
51356	"	C. K. Tyler	"	13.04	8.64	4.4	"	" 90000 "
51357	"	Wm. Suckstorff	"	12.56	8.56	4.0	"	" 85000 "
51359	"	A. N. & I. H. Buck	"	13.16	8.66	4.5	"	" 44000 "
51360	"	E. J. Viens.....	"	13.43	9.13	4.3	"	" 72000 "
51361	"	I. E. Chase.....	"	12.79	8.59	4.2	"	" 60800 "
51363	"	J. B. Ritchie	"	12.32	8.52	3.8	"	" 91000 "
51372	"	J. Roland	"	12.94	9.04	3.9	"	" 28000 "
51390	"	Steele & Butler.....	"	13.15	8.55	4.6	"	" 92000 "
51366	"	H. H. Wheeler.....	"	.....	....	42	"	No preservat'e; cr'm
51367	"	A. N. & O. H. Buck....	"	.....	....	42	"	"
51368	"	C. C. Bliss.....	"	.....	....	34	"	"
51369	"	H. B. Chittenden & Son	"	.....	....	42	"	"
51370	"	Baker & Tupper.....	"	.....	....	50	"	"
51371	"	H. A Bixby.....	"	.....	....	41	"	"
51380	"	D. J. Millham & Son...	"	.....	....	43	"	"
51313	"	J. B. Gould.....	Ft. Ethan Allen	.....	....	60	"	"
51379	"	E. A. Barrows.....	Hartford	13.00	9.1	3.9	"	Submitted
51521	9-11-07	J. J. Van Sicklen.....	S. Burlington	13.42	8.92	4.5	"	"
51710	9-20-07	S. A. Howard.....	Center Rutland	14.01	8.81	5.2	"	"
51711	"	"	"	13.05	8.85	4.2	"	"
51712	"	"	"	14.13	8.93	5.2	"	"
51775	9-26-07	Temple Bros.....	Rutland	14.26	9.0	5.2	"	.....
51769	"	A. K. Candlish.....	"	12.79	8.5	4.3	"	.....
51770	"	T. A. Quigley.....	"	12.44	8.54	3.9	"	.....
51771	"	David Lilley.....	"	13.42	8.62	4.8	"	.....
51773	"	Ray Russell.....	"	12.91	8.51	4.4	"	.....
51774	"	G. A. Davis.....	"	12.81	8.81	4.0	"	.....
51777	"	A. A. Plumley.....	"	12.56	8.56	4.0	"	.....
51778	"	C. G. Marks.....	"	13.76	8.86	4.9	"	.....
51779	"	R. H. Fintell.....	"	12.80	8.6	4.5	"	.....
51783	"	O. S. Frost.....	"	13.02	8.5	4.5	"	.....
51784	"	T. J. Hart.....	"	12.92	8.6	4.3	"	.....
51785	"	C. P. Bebee	"	12.65	8.55	4.1	"	.....
51786	"	Leigh Hunt	"	13.52	8.72	4.8	"	.....
51788	"	J. C. McGoldrich.....	"	13.59	8.69	4.9	"	.....
51790	"	John S. Grandy.....	"	13.54	9.0	4.5	"	....
51825	9-30-07	Steele & Butler.....	Burlington	13.04	8.64	4.4	"	Bacteria 17000 per c.c.
51826	"	"	"	.....	....	45	"	Cream
51827	"	L. E. Haynes	"	13.52	9.12	4.4	"	Bacteria 32000 per c.c.
51828	"	H. A. Bixby.	"	13.84	9.04	4.8	"	" 10000 "
51829	"	E. A. Reynolds.....	"	13.54	8.94	4.6	"	" 44000 "
51830	"	I. H. Buck.....	"	13.66	8.96	4.7	"	" 20000 "
51831	"	C. C. Bliss.....	"	13.05	8.85	4.2	"	" 19000 "
51832	"	River View Farm.....	"	12.92	8.62	4.3	"	" 26000 "
51833	"	C. K. Tyler	"	12.93	8.83	4.1	"	" 40000 "
51834	"	H. B. Chittenden & Son	"	14.14	8.94	5.2	"	" 12000 "
51835	"	J. E. Maynard.....	"	13.54	8.94	4.6	"	" 34000 "
51838	"	J. B. Ritchie	"	13.76	8.76	5.0	"	" 22000 "
51839	"	D. J. Millham & Son...	"	13.28	8.68	4.6	"	" 42000 "
51849	"	O. E. Barber.....	"	12.70	8.50	4.2	"	" 72000 "

Digitized by Google

MILK ABOVE STANDARD EXAMINED FROM AUGUST 10 TO NOVEMBER 10, 1907 (Continued)

Labratory No	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
51841	9-30-07	J. G. G. Downing.....	Burlington	13.16	8.66	4.5	Normal	Bacteria 12000 per c. c.
51842	"	"	"	14.13	8.93	5.2	"	" 44000 "
51843	"	M. D. Perleman.....	"	13.52	8.72	4.8	"	" 24000 "
51844	"	E. J. Viens.....	"	12.92	8.72	4.2	"	" 12000 "
51845	"	Dennis Bourne.....	"	13.88	8.88	5.0	"	" 22000 "
51846	"	F. L. Murray.....	"	13.04	8.64	4.4	"	" 28000 "
51847	"	Baker & Tupper.....	"	13.76	8.76	5.0	"	" 8000 "
51849	"	Wm. Suckstorff.....	"	12.92	8.62	4.3	"	" 44000 "
51850	"	I. E. Chase.....	"	13.42	8.92	4.5	"	" 26000 "
51851	"	Mrs. F. Saltus.....	"	13.04	8.64	4.4	"	" 56000 "
51852	"	H. H. Wheeler.....	"	13.18	8.88	4.3	"	" 8000 "
51853	"	F. X. Bordo.....	"	13.52	8.72	4.8	"	" 28000 "
51854	"	Thos. Ryan.....	"	13.40	8.70	4.7	"	" 16000 "
51863	"	R. A. Warner.....	St. Albans	12.85	8.85	4.0	"	.....
51864	"	J. N. Warner.....	"	14.01	9.81	5.2	"	.....
51865	"	W. S. Clark.....	"	12.49	8.89	3.6	"	.....
51866	"	J. W. Campbell.....	"	12.81	8.81	4.0	"	.....
51867	"	F. O. Jackson.....	"	12.59	8.79	3.8	"	.....
52225	10-15-07	Arad Hunt.....	Brattleboro	12.94	9.04	3.9	"	.....
52230	"	H. J. Smith.....	"	13.90	9.10	4.8	"	.....
52231	"	A. M. Bassett.....	"	14.82	9.62	5.2	"	.....
52233	"	M. R. Robbins.....	"	13.78	8.98	4.8	"	.....
52234	"	W. M. Randall.....	"	13.52	9.72	4.8	"	.....

Digitized by Google

MILK ABOVE STANDARD, EXAMINED FROM AUGUST 10 TO SEPTEMBER 10, 1907.

Laboratory No.	Date.	Dealer.	Town.	Total Solids.	Solids Not Fat.	Fat.	Microscopical.	Remarks.
52410	10-24-07	I. H. Buck	Burlington	13.76	8.76	5.0	Normal	Bacteria 46000 per c. c.
52141	"	C. C. Bliss	"	12.81	8.81	4.0	"	" 17000 " "
52412	"	Steele & Butler	"	12.92	8.72	4.2	"	" 8000 " "
52413	"	E. A. Reynolds	"	13.90	9.0	4.9	"	" 8000 " "
52416	"	River View Farm	"	12.69	8.79	3.9	"	" 17000 " "
52417	"	Baker & Tupper	"	13.40	8.80	4.6	"	" 6000 " "
52421	"	D. J. Millham & Son	"	13.17	8.97	4.2	"	" 9000 " "
52422	"	H. B. Chittenden & Son.	"	13.30	8.90	4 4	"	" 7000 " "
52423	"	J. E. Maynard	"	12.53	8.63	3.9	"	" 48000 " "
52453	"	H. A. Bixby	"	13.40	.80	4.6	"	" 17000 " "
52551	10-30-07	E. H. Brooks	St. Albans	13.42	8.92	4.5	"	
52552	"	F. O. Jackson	"	12.20	8.60	3.6	"	
52553	"	Z. Campbell	"	13.31	9.11	4.2	"	
52554	"	J. W. Warner	"	12.45	8.75	3.7	"	
52555	"	W. S. Clark	"	13.16	8.66	4.5	"	
52595	11- 4-07	Martin Cone	Bennington	13.66	9 06	4.6	"	
52596	"	John Rockwood	"	13.30	8.90	4.4	"	
52597	"	Jered Howard	"	13.03	8.63	4.4	"	
52598	"	J. C. Colgate	"	13.18	8.88	4.3	"	
52601	"	Romaine Crawford	"	13.28	8.68	4.6	"	
52602	"	W. C. Robinson	"	13.52	8.72	4.8	"	
52603	"	Hiland Fay & Son	"	13.40	8.80	4.6	"	
52604	"	Mrs. A. E. Rice	"	13.30	8.90	4.4	"	
52605	"	Seymour Van Santwood	"	12.44	8.54	3.9	"	
52608	"	J. B. Parsons	"	13.78	8.58	4.8	"	
52611	"	C. H. Mattison	"	13.16	8.66	4.5	"	
52612	"	Wm. E. Mattison	"	.....	....	6.4	"	Top Milk
52613	"	Christopher Amidon	"	.....	....	23.0	"	Cream
52614	"	S. Everett Harwood	"	.....		23.0	"	"
52548	11- 2-07	H. H. Wheeler	Burlington	13.17	8.97	4.2	"	Bacteria 12000 per c. c.
52547	"	L. E. Haynes	"	14.63	9.33	5.3	"	" 12000 " "
52573	"	F. X. Bordo	"	13.16	8.76	4.4	"	" 14000 " "
52574	"	J. B Ritchie	"	13.05	8.85	4.2	"	" 16000 " "
52575	"	T. P. Welch	"	13 40	8.70	4.7	"	" 20000 " "
52577	"	J. G. G. Downing	"	13.05	8.85	4.2	"	" 36000 " "
52578	"	E. J. Viens	"	14.00	8.90	5.1	"	" 12000 " "
52580	"	Wm. Suckstorff	"	13.16	8.76	4.4	"	" 12000 " "
52753	11- 7-07	F. R. Hayden	Montpelier	13.05	8.85	4.2	"	

Total above Standard, 125.

Digitized by Google

CASES OF COMMUNICABLE DISEASES REPORTED TO THE SECRETARY OF THE STATE BOARD OF HEALTH FROM MAY 11 TO NOVEMBER 10, INCLUSIVE.

County.	Small Pox.	Measles.	Whooping Cough.	Scarlatina.	Diphtheria and Croup.	Typhoid Fever.	Meningitis.	Erysipelas.	Chicken Pox.	Mumps.	Pneumonia.	German Measles.
Addison	5	5	88	12	26	8	..	..	6	3	1	..
Bennington	..	1	6	1	17	3	..	..	12	3	5	2
Caledonia	..	9	95	14	23	27	..	..	17	244	..	85
Chittenden	..	4	68	16	66	8	..	..	3	15	1	27
Essex	..	1	31	..	4	..	..	..	..	139	..	1
Franklin	..	4	120	..	8	21	..	..	25	56	..	61
Grand Isle	..	..	..	2	6	..	..	..	..	..	..	..
Lamoille	..	..	72	3	..	2	..	..	1	1	..	..
Orange	..	..	40	15	4	3	..	2	3	14	..	55
Orleans	..	12	152	7	3	1	..	..	17	16	..	6
Rutland	..	7	40	14	13	11	1	..	21	16	..	..
Washington	34	25	110	7	11	3	..	..	10	1	..	..
Windham	..	40	55	16	13	13	..	1	34	44	4	16
Windsor	1	4	113	20	6	9	..	1	13	20	1	26
Totals	40	112	940	127	199	108	1	4	163	573	11	279

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

Volume VIII. No. 2.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

IMPORTANT.

To Town Clerks:—

It is essential that all town and city clerks should make prompt and accurate returns of all marriages, births and deaths occurring in their respective towns, semi-annually, as the law requires. See No. 140, of the Acts of 1904, as amended in 1906. Section 2 of this act reads as follows:—

Section 2. Town and city clerks shall receive, number and file, in the order in which they have occurred, all certificates of births, marriages and deaths, in their respective towns and cities; they shall preserve all certificates of births, marriages and deaths, and all burial, removal and transit permits returned to them under this act.

Town and city clerks shall at least once in five years procure all certificates and permits received by them under the provision of this act to be bound in volumes of convenient size and indexed, and the same, as well as said certificates and permits before being bound, shall be kept and remain in each town or city clerk's office as permanent records. Marriage certificates shall be bound in one volume or series, birth certificates in another volume or series, and death certificates, burial, removal and transit permits shall be bound in another.

Town and city clerks shall semi-annually, in the months of February and August, transmit to the secretary of the State Board of Health a certified copy of each birth, marriage and death certificate received

Digitized by Google

by them during the six months last preceding the first days of January and July, respectively, of each year in which the copy is made, such copy to be upon blank forms furnished by the secretary of the State Board of Health.

Town and city clerks shall receive the sum of ten cents for each birth, marriage and death certificate certified as above; which sum with the cost of binding the certificates and permits specified in this section shall be paid from the town or city treasury.

Section 1 provides that "the town and city clerk shall once each year notify each physician, midwife or other person required to make reports of births and deaths under this act, that he is prepared to furnish each with the requisite blanks."

The copy of the birth, marriage and death certificate should be promptly and carefully made, the chief and contributing causes of death both being plainly stated.

These returns should be in the office of the secretary of the State Board not later than February and August, respectively.

If the town or city clerk fails to make these returns within the time required, he is subject to a penalty. See No. 190, of the Acts of 1906. Section 1 reads as follows:—

Section 1. A state, county, town, village, fire district or school district officer who willfully neglects to perform the duties imposed upon him by law, either express or implied, shall be imprisoned not more than one year or fined not more than one thousand dollars, or both.

The secretary does not desire to see this penalty enforced, but not only WISHES the reports but MUST HAVE THEM, and if to get them, as the law provides, it is necessary, in certain cases to see that the penalty be enforced, the responsibility for such required enforcement will be upon the clerk who fails to comply with the statute.

If any physician or midwife or other person neglects to make a return of a birth as required in Section 8, or if a physician who is last in attendance upon a deceased person fails to file a certificate of death as required in Section 9 of this act, the town clerk should take such measures as will cause a prompt compliance with the law. There is no excuse for neglect to report at the proper time. In too many instances failure to report both births and deaths has occurred, until weeks or even months after they should have been reported, such births and deaths sometimes being returned in the subsequent period, after the tables for the period in which they belong have been made up, thus requiring an entire change in many of the tables.

The health officer should refuse to issue a burial permit until all the questions on the certificate of death are answered and the causes of death properly stated.

The secretary has been obliged to write over 300 letters to physi-

Digitized by Google

sians and town clerks in order to get necessary accurate facts to enable him to properly classify the causes of death, as well as to make, as he is required to do, an acceptable return to the Census Bureau in Washington. For instance, the report gives as a cause of death, "hemorrhage"; inquiry is made as to the cause of the hemorrhage; the reply comes, "hemorrhage from the bowels, caused by typhoid fever." Either that important fact did not appear in the original certificate, or the town clerk failed to copy it. It should be kept in mind by every person having to do with either the certificates or the abstract reports that the secretary never sees the original certificates, which the law requires shall be kept in the town clerk's office as a permanent record. Hence the reason for urging that the certificates be accurately and fully filled out and plainly written. The same request applies to the filling out of the abstracts. The law provides that the physician, the health officer and the clerk shall each receive a fee for their respective labors in these cases and it also provides a penalty for failure so to do.

Work of Laboratory. In the last three months the laboratory has accomplished a very large amount of work. About 1,600 specimens other than milk have been examined. Examinations of milk have been 138, of which two thirds have been practically clean milk; seven below standard; one was watered. This makes three specimens of watered milk found in the last six months. All of these venders have been fined each $50, which they paid.

Inquiries having been made by some physicians relative to the quarantine in cases of diphtheria, the following statement is made: A circular was issued some time since, relative to diphtheria, in which certain regulations were promulgated, under the authority as given in Section 7 of No. 113, Acts of 1902, as amended in 1904 and 1906, for the control of this disease. (Copies of these regulations can be had on application to local health officers, or the secretary of the State Board.) It directs that the attending physician should immediately report the case to the local health officer, that a culture should be taken from the throat and nose and sent to the Laboratory of Hygiene, Burlington. This is a part of the duty of the attending physician. When, in his opinion, the time has come when the question of releasing the patient from quarantine is to be considered, there must be two specimens or cultures of the secretions from the throat and nose, taken three days apart, sent to the laboratory and each found free from the Klebs-Loeffler bacillus, before the patient should be released. The expense of taking these cultures and the postage for sending

Digitized by Google

them to the laboratory should be charged by the attending physician as a part of his attendance on the case. Always remember that it is letter postage.

Under the authority of Act No. 113, of 1902, the following rules and regulations are promulgated by the State Board of Health of Vermont relative to the care of slaughter houses, the conduct of the business in such houses and the care of the carcasses of slaughtered animals, or meat products contained therein.

RULE 1. (a) All establishments in which animals are slaughtered, or the meats and meat food products are prepared, cured, packed, stored, or handled, shall be suitably lighted, ventilated, supplied with running water, and maintained in a sanitary condition. All employees shall keep themselves clean. All work in such establishments shall be performed in a cleanly and sanitary manner. All yards, premises adjacent to such establishments, or parts of the building, whether used or not, shall be maintained in a sanitary condition. The feeding of swine or other animals on the refuse of slaughter-houses will not be permitted on the premises and no use incompatible with proper sanitation shall be made of any part of the premises on which such establishment is located.

(b) Ceilings, side walls, pillars, partitions, etc., shall be frequently whitewashed or painted, or, where this is impracticable, they shall, when necessary, be washed, scraped, or otherwise rendered sanitary. Where floors or other parts of a building, or tables or other parts of the equipment, are so old or in such condition that they cannot readily be made sanitary, they shall be removed and replaced by suitable materials or otherwise put in a condition acceptable to the local board. All floors upon which meats are piled during the process of curing shall be so constructed that they can be kept in a clean and sanitary condition, and such meats shall also be kept clean.

(c) All trucks, trays, and other receptacles, all chutes, platforms, racks, tables, etc., and all knives, saws, cleavers, and other tools, and all utensils and machinery used in moving, handling, cutting, chopping, mixing, canning, or other process, shall be thoroughly cleansed daily, if used.

(d) The aprons, smocks, or other outer clothing of employees who handle meat in contact with such clothing shall be of a material that is readily cleansed and made sanitary, and shall be cleansed daily, if used. Employees who handle meats or meat food products shall be required to keep their hands clean.

(e) All toilet rooms, urinals, and dressing rooms shall be entirely separated from compartments in which carcasses are dressed or meats or meat food products are cured, stored, packed, handled, or prepared. They shall be sufficient in number, ample in size, and kept in a thorough sanitary condition.

(f) The rooms or compartments in which meats or meat food products

Digitized by Google

are prepared, cured, stored, packed, or otherwise handled shall be lighted and ventilated in a manner acceptable to the local board, and shall be so located that odors from toilet rooms, catch-basins, tank rooms, hide cellars, etc., do not permeate them. All rooms or compartments shall be provided with cuspidors, which employees who expectorate shall be required to use.

(g) Persons affected with tuberculosis or any other communicable disease shall not be employed in any of the departments of establishments where carcasses are dressed, meats handled, or meat food products prepared.

RULE 2. (a) Butchers who dress diseased carcasses shall cleanse their hands and all knives or other implements used in dressing such diseased carcasses, by thoroughly washing and then disinfecting them in lysol, subsequently rinsing them in clear water, before dressing or handling a healthy carcass.

(b) The attention of butchers and all other persons dealing in animals which are to be, or the carcasses of those that have been slaughtered, which are intended to be sold for food, is called to Acts No. 175 and No. 182, of 1906.

State Board of Health,

HENRY D. HOLTON,

Secretary and Executive Officer.

October, 1907.

Digitized by Google

614.0974
V 2 6

UNIV. OF MICH.
MAY 12 1908

Bulletin No. 3, Volume VIII.

Issued Quarterly by

Vermont State Board of Health,

March 1, 1908.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS:

Pure Foods and Drugs, by L. P. Sprague, M. S., Food Chemist. Page 3.

Methods of Dealing with the Milk Supply of New York City, by Thomas Darlington, M. D., Commissioner of Health, New York City. Page 8.

The Law Relating to Duties of Health Officers, by R. A. Lawrence. Page 19.

Discussion of Dr. Stone's Paper, Published in Preceding Bulletin, on the Work of the Laboratory. Page 34.

Work of the Laboratory. Page 38.

News Items. Page 53.

BRATTLEBORO, VT.
1908

Digitized by Google

Digitized by Google

PURE FOODS AND DRUGS.

By L. P. Sprague, M. S., Food Chemist.

The first Vermont Pure Food and Drug Act was passed November 11, 1904, and took effect upon its passage. The legislature of 1906 amended the act so that its requirements are now practically identical with the National Pure Food and Drug Act. The regulations and standards adopted by the State Board of Health are likewise similar to those of the government, being modified only to meet local requirements. The pure food and drug law together with its amendments and the regulations and standards has been issued as a booklet entitled "Pure Food Law." Copies of this have been sent to the town clerks and local health officers for distribution. It may also be obtained from the secretary of the State Board of Health. A copy should be in the hands of every dealer in foods and drugs in the state and he should familiarize himself with it.

Guarantee.

The passage of a law which conforms to the National Pure Food and Drug Act and the adoption of like regulations and standards, makes it possible for all dealers to protect themselves. All goods bought should be purchased under a guarantee that they will conform either to the National Pure Food and Drug Act or the Vermont Pure Food and Drug Act. This guarantee should be in writing, not simply the word of an agent that they will pass any food and drug law, and it must be in proper form. It must specifically mention the title of the act under which the guarantee is issued and it must contain the name and address of the party executing the guarantee. It does not necessarily have to bear a serial number. It may be attached to, or a part of, the label or on a separate sheet. Simply guarantees of strength, purity, quality, or other properties mean little or nothing and can not be accepted. All dealers should insist on such a guarantee whether the articles are manufactured outside or inside the state, including all farm produce. While such a guarantee does not mean that a dealer will not be prosecuted should he be selling adulterated goods which are thus guaranteed, it does mean that the party making the guarantee is responsible for the offense. Furthermore, few if any manufacturers or wholesalers will give such a guarantee unless their goods are legal.

Label.

The principal label must bear the name of the product, and in case of compounds, mixtures, or blends, the name of the place of manufacture. If the product contains any of the substances, or their derivatives, required

Digitized by Google

to be stated on the label (a list of which will be found in Regulation 23 of the Pure Food Laws) such substances must be stated on the principal label in 8-point (brevier) caps before any descriptive matter. If they are compounds, mixtures, or blends, or otherwise vary from the standards, it must be so stated on the principal label in type similar to the above. In case of small labels, the type may be reduced proportionately. False or misleading statements are illegal.

There is still much carelessness in the matter of labels. The required words are often in small type and placed in an inconspicuous place on the label. Articles thus labeled are illegal, a fact which frequently has to be explained. A study of Regulation 13 will show why they are illegal. False, misleading, or exaggerated statements are still seen, although with less frequency. Such statements as "highly concentrated," "extra strong," "triple strength," "stronger and richer than any other on the market," etc. as applied to foods of ordinary quality and strength and the use of phrases as "sure cure," "specific," "unfailing remedy," "instant relief," etc. in the case of drugs, are undoubtedly misleading and the use of the same is illegal.

OLD STOCK.

There is still found on the shelves of dealers much stock that was bought before July 1, 1907, when the amended Food and Drug Act went into effect. Much of this stock is misbranded, especially patent and proprietary medicines, and the sale of the same is illegal. The law has been in effect a sufficient length of time so that dealers can determine whether they are illegal or legal by applying to the manufacturer for a statement as to whether or not they contain any of the substances required to be stated on the label and, if so, in what proportion. If the product contains such substances their names together with their proportion should be printed on a supplementary label and this pasted to the principal label in a conspicuous place. Such stickers will be accepted for a limited time provided that they bear a statement that they were on hand July 1, 1907. If the manufacturer is unwilling to give such a statement or has gone out of business, the goods should be destroyed. This will mean no great loss as the space is worth more than such articles. False, misleading, or exaggerated statements are obvious and should be erased from all labels.

LEGAL ARTICLES.

Articles which are examined at the Laboratory and found to comply with the Food and Drug Act are passed as legal and a notice is sent to the dealer from whom they were procured. This does not mean that the Laboratory or the Board of Health recommend or guarantee such articles in any way whatsoever. The article may be of poor quality, but if it is properly labeled it is legal and is thus passed. The law aims to have all products so labeled

Digitized by Google

that the purchaser will know their true worth, and a statement from the Board of Health that an article is legal in no wise advises the public to use the same.

LIQUID MALT EXTRACTS.

Samples of practically all the liquid malt extracts sold in the state have been collected and analyzed. These are sold under various names and they bear little resemblance to the thick, syrupy, malt extract of the Pharmacopœia. They sell from twelve and one-half cents to fifty cents per bottle. The cheaper ones are little more than beer and yet they are sold throughout the state in no-license as well as licensed towns. The alcoholic percentage of these malt preparations varies from 1.06 to 8.72 by volume and only on a few of the labels is this stated. If they are sold for drugs, they are evidently misbranded and are illegal. If sold as a beverage they are illegal under the liquor law which limits beverages to one percent by volume of alcohol.

The following extracts were preserved with salicylic acid or its derivatives:—Victor Malt Extract, Malt Nutrine, Nutrient Tonic Compound of Malt and Hops, and Wampole's Extract of Malt. As these are sold as medicines, it is permissible for them to contain salicylates although they are manifestly added as a preservative, not for any medicinal purpose.

PATENT AND PROPRIETARY MEDICINES.

Patent or proprietary medicines manufactured since the Pure Food and Drug Law went into effect generally comply with the regulations. The substances required to be stated are usually on the labels but the type is frequently smaller than 8-point caps and occupies an inconspicuous place. Percentages as stated are generally found to vary but little from the amounts which they actually contain. In some cases however, there is great discrepancy. Ring's Peerless Kidney Remedy was labeled to contain not over 9 per cent alcohol, while it actually contained 66.5 per cent by volume. Ring's Nox-Um-All Pain Killer labeled to contain not over 90 per cent alcohol, contained only 59.7 per cent by volume. Some patent medicines are found which bear the name of a drug of which they contain little or none. Dr. Robinson's Cacterine, said to be a product of the Mexican cactus, was found to be boric acid. Dr. Hagar's Sovereign Oak Balm was found to be chiefly alum and cocoa butter. Wei De Meyer's Catarrh Cure comes in a small partitioned box. The accompanying circular states that great care must be taken not to mix the contents. The powder on each side of the partition was found to be common washing soda.

PHARMACOPŒIA DRUGS.

A drug bearing a name recognized in the United States Pharmacopœia or National Formulary without any further statement must conform strictly

Digitized by Google

to the prescribed standards. However, if such a drug is branded to show a different strength or quality, it is legal if it conforms to its stated standard.

Many preparations, as spirit of camphor, lime water, tincture of iodine, Fowler's solution, etc., are compounded by the local druggists. These are frequently found to be illegal in that they are low in their active principles. Some, however, are high in these principles and thus are likewise illegal, as this shows carelessness in compounding and might lead to serious results. Other preparations as the tinctures and fluid extracts of medicinal plants are sometimes compounded by the local pharmacists but are more frequently bought of wholesale drug houses. These likewise do not always correspond to the required standard being both stronger and weaker in their active principles.

FLAVORING EXTRACTS.

Vanilla and lemon extracts are the principal flavors used although miscellaneous flavors are used to some extent.

Vanilla Extract.—Pure vanilla extract is a solution of the vanilla bean in ethyl alcohol with or without sugar or glycerine of such strength that 100 cubic centimeters contains soluble matters from not less than 10 grams of the vanilla bean. An extract which contains less than this amount or is adulterated in any way is illegal. The most common adulterant is the tonka bean or its active principle, coumarin, the product being given the proper color by the use of caramel. A preparation thus compounded must not be labeled vanilla extract, but vanilla flavoring, vanilla compound, etc., and the name of the substance substituted must appear upon the label (regulation 20.) The extracts containing coumarin can usually be recognized by their odor, it being much more pungent and penetrating than that of vanilla.

Lemon Extract.—Lemon extract is a solution of oil of lemon or lemon peel or both in ethyl alcohol and contains not less than five per cent by volume of lemon oil. The samples examined vary much in the quantity of lemon oil, from a trace to over seven per cent. It is surprising how a drop of lemon oil will give the odor to a few ounces of alcohol and water and thus lead the purchaser to believe that he is buying a good grade of extract. The alcohol in a given amount is more expensive than the oil and for that reason little oil is used as the alcohol must be at least eighty per cent to contain five per cent of lemon oil. The cheap extracts are made by rubbing the oil up in carbonate of magnesia, stirring in a little strong alcohol and making up to the required amount with water. These are sometimes reinforced with citric or tartaric acid. Tumeric tincture or coal tar dyes are used to give them the color which should be due to lemon peel. In case of lemon extract, over five per cent is not illegal, as in the case of drugs, as the standard calls for not less than five per cent.

Miscellaneous Flavoring Extracts.—These may be divided into two classes.

Digitized by Google

(1) Those which are solutions of oil in ethyl alcohol including peppermint, wintergreen, sweet birch, orange, almond, clove, ginger, cinnamon, etc. (2) Artificial essences or compound ethers which imitate fruit flavors as strawberry, raspberry, pineapple, banana, cherry, peach, and other fruits. Those of the first class are frequently found to contain less than the required amount of oil and are thus illegal. Those of the second class are artificial and must be so branded. The latter are chiefly used to flavor soft drinks, ice cream, candy, etc. All substances in which they are used, must be branded "artificial."

MILK.

The examination of the milk supply of the state has received more attention than any other line of food or drug work. That this time has been well spent is shown by the fact that the Board of Health Bulletin for March 1, 1907, reported only twenty-six per cent of the samples as above standard while the present bulletin reports over sixty-nine per cent of the samples to be above standard. The samples have been condemned chiefly because of dirt which can easily be seen in the bottom of the jar, the bacterial count not being made because of the distance which the milk must be shipped. A few samples have been found below standard chemically, a few watered, and one preserved. That the standard set is not too high is shown by the fact that over seventy per cent of the dealers are complying with it and there is no excuse for the other thirty per cent not doing likewise. The cases of watering and preserving have been prosecuted and the offenders fined. Warning notices have been sent to all dealers whose milk is below standard as it seemed best not to prosecute too soon for dirty milk. The dealers have had over one year of such warning notices and hereafter all cases of dirty milk will be prosecuted as violations of the Pure Food Law.

Digitized by Google

METHODS OF DEALING WITH THE MILK SUPPLY OF NEW YORK CITY.

By Thomas Darlington, M. D., Commissioner of Health, New York City.

Among the questions dealt with by sanitary authorities there is no other of greater importance than the one concerning the production and distribution of a supply of pure, clean milk. Many of the features of the vast question of food adulteration are being met by our national government in its regulation of interstate commerce. Of necessity, however, these laws can control the transportation only of the less perishable articles of food and the responsibility of the milk supply of a community must be left almost entirely to the local authorities. From the time when each family kept its own cow or depended for its supply of milk on a local farmer to the present situation, when the big cities depend upon a supply drawn from thousands of dairies scattered over wide areas, is a far cry.

This change has come about so insidiously and cities have grown with such astonishing rapidity that it is only recently that the public has awakened to the importance of this vital problem.

It is not my intention to discuss the question of the comparative merits of raw or pasteurized milk, but to present to you a brief outline of the methods used in New York City by its board of health in safeguarding the milk consumed in the city.

The milk used in New York comes from between 30,000 and 40,000 dairies or farms in an area covering some portion of six states: New York, New Jersey, Pennsylvania, Massachusetts, Connecticut and Vermont. The milk is collected at the shipping points or creameries, about 600 in number, and thence transported directly to the city. The longest distance from which it is transported it about 400 miles, while the shortest haul from a creamery is about 40 miles. All of the milk is at least 24 hours old when it reaches the consumer and the greater part is from 36 to 48 hours old.

It is recognized that there are two factors which influence and control very materially the keeping qualities of milk. The first is absolute cleanliness from the moment the milk is drawn from a healthy cow until such time as it is delivered into the hands of the consumer, and the second is the temperature at which the milk is kept during this period. If these conditions can be controlled and maintained, it is perfectly possible to assure a perfect milk supply.

It has been the endeavor of the department of health to maintain these conditions as regards the milk supply of New York City, first, by sys-

Digitized by Google

tematic and constant inspection, and second, by preventing the sale of any milk which may be found to be unwholesome or adulterated.

In order to accomplish this purpose, the inspection of the milk supply is necessarily divided into seven steps: first, the farm or dairy where the milk is produced; second, the transportation from the dairy to the creamery; third, the creamery; fourth, transportation from the creamery to the city; fifth, transportation from the railroad station to the retail store; sixth, the retail store, and seventh, the household in which the milk is kept prior to its use.

It is, of course, understood that the department of health has no authority outside of the geographical limits of the city, but the sanitary code provides that "No milk shall be received, held, kept, offered for sale or delivered in the city of New York without a permit from the board of health," and the board can withhold or rescind this permit if unsanitary conditions exist at the dairy or creamery where the milk is produced or handled.

It is also provided by the sanitary code that "No milk which is watered, adulterated, reduced or changed in any respect by the addition of water or other substance, or by the removal of cream shall be brought into the city of New York or held, kept, sold or offered for sale at any place in said city."

The term "adulterated milk" as used in this section of the code, means:

First—Milk containing more than 88 per centum of water or fluids.

Second—Milk containing less than 12 per centum of milk solids.

Third—Milk containing less than three per centum of fats.

Fourth—Milk drawn from animals within 15 days before or five days after parturition.

Fifth—Milk drawn from animals fed on distillery waste, or any substance in a state of fermentation or putrefaction, or on any unwholesome food.

Sixth—Milk drawn from cows kept in a crowded or unhealthy condition.

Seventh—Milk from which any part of the cream has been removed.

Eighth—Milk which has been diluted with water or any other fluid, or to which has been added, or into which has been introduced any foreign substance whatever.

Ninth—Milk the temperature of which is higher than 50° F.

At the present time, New York City employs 30 milk inspectors. Fifteen are assigned to duty within the city, and 15 to the inspection of the dairies and creameries.

The area from which milk is supplied is divided into districts, and the men who are assigned to country work live in their districts, and devote all of their time to the department's work, reporting once each month at the office of the department of health in New York City for any instructions which it may be deemed necessary to issue to them.

Digitized by Google

This country inspection is conducted in a systematic manner, the men going from creamery to creamery, remaining at each one until all of the farms supplying that particular place have been investigated and reported upon. These reports are mailed to the department, where letters to the operators of the farms are prepared, embracing all of the necessary recommendations to make the farms sanitary, and to safeguard the production of milk at that particular place. These letters of instruction are forwarded to the creamery operator for distribution among his dairymen.

In addition to the letter of instruction, the department sends to each creamery operator and dairyman rules and regulations to be observed in the care of cows and handling of milk. These rules are printed on a large sheet of linen and are to be posted in each barn or creamery building.

During 1906, 14,085 inspections were made outside of the city. The creameries have all been inspected, many of them several times. The dairies are being rapidly covered.

In making these inspections certain fundamental conditions are always inquired into, namely: that an ample and uncontaminated water supply be furnished to the creamery; that an ample and satisfactory method of disposing of the drainage from the creamery be installed; that all milk while being handled for bottling or canning and while being stored in the creamery be kept at such a temperature as to prevent the undue growth of bacteria, and that the milk be protected from the liability of contamination by flying particles of dust and dirt.

At the dairies, the main points inquired into are cleanliness of barns and cows, proper drainage, sanitation of the barns and yards, disposal of refuse, health of cows, conditions of milking and transportation of milk to the creameries, care of utensils, health of the members of the dairyman's family and condition of water supply.

All of this information is tabulated on cards and mailed to the office in New York.

During the early part of this work, many extremely unsanitary conditions were found. The situation in many instances was beyond hope of correction. A number of dairies were closed as the improvements and alterations recommended amounted practically to entirely rebuilding and re-establishing the dairy. No amount of pasteurization could ever make milk produced in such surroundings fit for human consumption. In fact, pasteurization can not atone for filth. Preventive measures are better than corrective ones, and whatever opinion may be held as to the relative necessity of pasteurization, the essential feature of a pure milk supply is that the milk be produced under clean conditions, and that it be kept clean.

The fact that the farmers are without a market for their milk unless they comply with the rules of the department has been a potent influence in causing them to comply with our orders. The creameries are practi-

Digitized by Google

cally all conforming to our regulations and the dairies and farms are being rapidly put into a sanitary condition.

The next step in guarding the milk is the securing of proper conditions on the railroads for its care in transit from the creameries to the city. Conferences have been held with the officials of the railroads directly concerned in this transportation. In practically every instance, these gentlemen have met the suggestions of the department most cordially. Large and well planned refrigerator cars have been added to the service. All of the railroads are erecting or have erected ice houses of great capacity in order that they may supply their shippers with a sufficient quantity of ice to carry them through the warm and critical months of the year. As a result milk is now transported under excellent conditions and the required maximum temperature of 50° Fahrenheit, is almost universally maintained. As it is a well known fact that in milk kept at or below this temperature bacteria multiply slowly, if at all, particular stress is laid upon this point. At the depots or receiving stations in the city inspectors are at hand to watch the milk as it arrives. If there is any question as to the proper icing of the cans a thermometer is used and all milk found to be above 50° is promptly condemned and destroyed.

In New York City there are 14,107 dealers holding permits for the sale of milk. When an application for a permit is made, a copy of rules and regulations are handed to the applicant and he is instructed that unless the conditions under which he proposes to sell milk comply with these rules and regulations his permit to sell milk will be denied.

After the application for a permit has been received, an inspection is made of the premises by an inspector of the department. If the premises and conditions are found to be suitable, the permit is granted.

The city is divided into districts, each in charge of an inspector. The latter makes frequent reinspections of all places where milk is sold and he is held responsible for the conditions in his district. At each inspection sanitary conditions are noted, the milk is inspected and tested for temperature and possible adulteration. In case the latter is suspected, samples are taken and sent to the laboratories of the department for analysis. Doubtful specimens are subjected to bacterial count. If the milk is above the proper temperature it is promptly confiscated. If it proves to be adulterated, a warrant is obtained for the arrest of the dealer. The usual procedure in such cases is for the magistrate to hold the defendant for trial in the Court of Special Sessions. Conviction usually results in a fine and at the second offence the department revokes the dealer's permit.

During 1906, 130,871 inspections and reinspections were made in the city, 138,505 specimens of milk were examined, 41,395 quarts of milk were destroyed, 678 arrests were made and $13,045 in fines were imposed. In this connection it is interesting to note that during 1905 $16,435 was collected from fines. As the inspections are equally rigorous, and the

Digitized by Google

judgments even more severe than formerly, it shows a marked improvement in the character of the milk sold.

The question of the control of the milk supply after it reaches the consumer and before it is used is the most intricate one with which we have to deal. The proper care of milk in the household can only be consummated by properly educating the public as to its importance.

As a large proportion of the diarrhœal diseases of infancy are due to the ingestion of impure milk, the matter must be dealt with by the health authorities. This evil is at its height during the summer months and for many years the department of health of New York City has endeavored to cope with it by means of its "Summer Corps." The physicians and nurses constituting this "corps" canvass the tenement district and by means of oral and written instructions demonstrate to the mothers the necessity of the proper care and preparation of milk for the baby. Pasteurization is urged, tickets for ice from the Herald Free Ice stations are issued, and every effort is made to see that the people are educated as to the prime importance of this subject.

The milk supply of New York City at the present time is better than it has ever been. It is constantly improving and the solution of the whole problem is simply one of expansion. Following out the present system, our need is for more inspectors so that the inspections of the farms, creameries and stores can be made more frequently. It is perfectly possible to insure a perfectly pure milk supply to any city if systematic inspection is maintained and the dictum of "clean up and keep clean" is enforced.

Early in this year, an important addition was made to the sanitary code of the board of health. It provides that:

"It shall be the duty of all persons having in their possessions bottles, cans or other receptacles containing milk or cream, which are used in the transportation and delivery of milk or cream, to clean or cause them to be cleaned immediately upon emptying; and no person shall use or cause or allow to be used any such receptacle for any purpose whatsoever other than the holding of milk or cream, or receive or have in his possession any such receptacle so used or which is unclean or in which milk or cream has been allowed to stand until offensive."

This section is simply in line with our constant efforts toward ultimate perfection.

As a special branch of the work, the investigation of the milk supply in all instances of typhoid fever should be mentioned. In each case the attending physician is supplied with a card requesting information as to the disease and all possible sources of infection. The name of the dealer supplying milk to the family is obtained. The dealer is visited by an inspector from the department and a rigid investigation concerning the milk is carried on, the milk being traced back through the creamery to the dairy and all possible avenues of infection carefully traced.

Digitized by Google

In order to obtain a concensus of opinion as to ways of bettering our methods of milk inspection, the Mayor of New York, the Hon. George B. McClellan, early this spring appointed an advisory milk commission composed of the following eminent physicians: L. Emmet Holt, A. Jacobi, Joseph D. Bryant, T. Mitchell Prudden and Rowland D. Freeman. This commission reported to the Mayor on May 22 of this year and I will briefly state some of their findings and conclusions.

The report states that the scope of investigation covered every stage through which the milk sold in this city passed from the cow to the consumer; that milk obtained from a healthy cow is always wholesome and never a source of danger if it is kept cool and uncontaminated, but at the same time is a substance in which germs multiply rapidly under conditions favorable for their growth; that these contaminations arise from dirty surroundings, from milking a sick or dirty cow, from milking with dirty or wet hands, by the use of dirty utensils or contact with impure water or by keeping milk at a warm temperature favorable to the propagation of germs.

In regard to tuberculosis, the report states that "The risk of transmitting tuberculosis through milk from cows to man is very slight unless the disease in the cow is in an advanced form or is present in the udder. Even this slight risk is considerably lessened when such milk is mixed, as it generally is, with that of healthy cows before it is sold. We believe that this danger has been greatly overestimated in the public mind and that it can best be met by systematic inspection and condemnation of cows revealing tuberculosis on physical examination.

"To secure a good milk supply, it is of the first importance to educate the farmers regarding the measures which alone make this result possible, and afterwards to see that the rules relating thereto are carried out. Since for the most part the contaminating agents which render milk dangerous are introduced at the farms, the production of good milk demands that the farmers be educated so as to secure this result, and also that proper surveillance be exercised.

"To have efficient inspection of the milk business of New York City, at least 100 inspectors for the country districts from which the supply is drawn, in addition to the fifteen now available, should be employed.

"The work of the corps of inspectors should be two-fold—first, to point out to the producers of milk the conditions under which safe milk can be furnished, and second, to determine that these conditions are secured before the milk is permitted to be sold in this city. These inspectors should possess such kind of education and experience as will qualify them to work intelligently. They should be familiar with farming by experience, and in their selection preference should be given to men educated at good agricultural schools. They should be honest and possessed of good judgment and discretion. A certain proportion of them should be veterinarians and a certain proportion physicians, so that

Digitized by Google

both the diseases of the cattle and those of persons concerned in the production of milk can be promptly and effectively recognized and isolated."

Various recommendations are made as to labeling of bottles and cans with the farm or creamery from which the milk was shipped, and concerning the control of the sale of milk at retail stores.

The report also states that "Notwithstanding, after all safeguards that may be imposed by education or otherwise, there will be cases in which unsafe milk will be produced or offered for sale, and all such milk must be judged on its merits." The commission, therefore, recommends that the board of health should, according to circumstances, require efficient sterilization or pasteurization of all milk which it finds unsafe for consumption as raw milk, on account of a suspicion of the presence of tuberculosis or other disease in the cows or unsanitary conditions at the dairy, or a persistent high bacterial content. But in every instance milk so heated should be rapidly cooled to at least 40° F. and be put after sterilization or pasteurization into sterilized containers under aseptic precautions.

Discussion opened by L. P. Sprague, M. D., Food Inspector State Laboratory, Burlington.

I think there is little to add to Dr. Darlington's excellent paper on the subject of milk supplies and he has shown the condition of the dairies as they exist throughout New York. I have visited many dairies, especially about Burlington, and I find these same conditions exist here. As he has said, the only thing to be done is to tear down these old barns and rebuild them. They seem to have built the barns and then to have put the cows in the poorest part of them. There is no light and no ventilation and even if they are cleaned up the cows very soon get dirty again.

I will first speak of milk standards at the State Laboratory, although this subject was discussed in the last QUARTERLY BULLETIN. Chemically we use the United States Government standard, which is as follows: Milk shall not contain less than 8.5 per cent solids not fat, and not less than 3.25 per cent of milk fat. While this is not the same as the state standard, we consider it to be fairer to the producer for we have very little milk at the Laboratory which complies with the state standard. It would be manifestly unfair to require a higher grade of milk than a good healthy cow can produce. If milk does not comply with the Laboratory standards it certainly will not with the higher state standard, so one should have little trouble on that score should a case come to court.

We find some watered milk in this state. I have a great deal of confidence in the Vermont farmer, but I find some of them are adding water. We detect this by means of the refractometer and also determine the amount of solids left after evaporation, so we believe that there is no possibility of mistaking watered milk.

Microscopically we examine the milk for pus, streptococci and other evi-

Digitized by Google

dence of disease. We do not do a bacteriological count except on milk sold in Burlington. Milk which comes from outside the city is twenty-four to forty-eight hours older when it reaches us than when it is delivered to the consumer. As the bacteria multiply very rapidly, and the milk is kept under various conditions during shipment, a bacterial count at the Laboratory would give little information as to the number originally present. Milk packed in ice and shipped is unsatisfactory, so far as the bacterial count is concerned. Here in Burlington the bacteria run surprisingly low, the majority of milks being under 30,000 per c. c. As the conditions here are not so different from those in other parts of the state, I believe that the bacterial count in practically all the towns will run as low. As we cannot use the number of bacteria as a standard for dirty milk, we use a very simple method for detecting it. The milk is all collected in clean jars, and by simply letting the milk stand a few hours the dirt will collect on the bottom, where it is seen by holding the jar up to the light. With proper care this dirt can be kept out, for a large number of the milkmen are doing it and the others can as well. Of course straining milk will take out most of the dirt, but it will not take it all out, and moreover it does not remove the bacteria which get into the milk by means of the dirt. The idea to impress upon the farmers as regards dirty milk is this, that the best way to strain dirt out is to keep it out in the first place.

Dr. Darlington spoke of the farmers being willing to clean up and do what is right, if they are only shown. I believe this to be true and that we should educate the farmer to produce sanitary milk rather than to drive him to it. Of course there are some men who will continue along in the same old rut, absolutely refusing to take any advice as to the production of sanitary milk. These men will have to be driven, but the place to drive them is out of business. Of the farms which I have visited throughout the state, I find in general that the milkmen have the right sort of attitude and wish to produce good, wholesome milk. I have found few barns in which cows can be kept in a sanitary condition. The three chief things which they need are light, ventilation and cleanliness. In some cases the stables are in the basement in the darkest, poorest ventilated and dirtiest place in the entire barn, a place in which one wonders how any animal can live. These it is useless to try to put into a sanitary condition. The only remedy is to build new stables. In other barns the stables can be made sanitary places for cows with little expense. A few more windows should be added, the floors, walls and ceilings thoroughly cleansed and whitewashed and some adequate system of ventilation installed. The barnyards are very common places for the storing of manure and in the spring they become filled with mud and manure through which the cows must wade. These yards should be properly drained and the manure frequently hauled away.

Greater care should be taken in milking; the cows should be curried at least once a day and the udder cleaned before each milking. The milkers' clothes and hands should be cleaner than that of the average farmer and

Digitized by Google

hired man. After milking, the milk should be taken from the stable at once instead of allowing it to stand there until milking is finished or a convenient number of pails have been filled. The milk should be carried to a proper milk house or room where it is strained and cooled. The milk house and utensils should be kept in a clean, sanitary condition, which can be done by means of steam or boiling water.

Dr. Holton has blanks printed for the inspection of stables, which I believe he intends to distribute to the health officers, so that there will be an adequate inspection of stables throughout the state. The farmers can thus be told how they can produce sanitary milk and by visiting them occasionally they will be more likely to keep up to the standard.

I would make a few suggestions to health officers regarding the collection of samples, although in the main the samples have been properly and efficiently taken. The writing on the labels should be very plain, which they are not always. It leads to much confusion in our reports to have a dealer's name wrongly spelled or his initials incorrectly given. The cans from which the samples are taken should be thoroughly mixed by pouring at least twice. When we get samples, the fat of which is 7, 8, 10 or even higher, we know that the sample was improperly taken as no cow produces a milk of this richness.

Discussion by Prof. J. L. Hills.

There were two matters of terminology which seem worth mentioning; i. e. Dr. Darlington's use of the words "creamery" and "grain feeding." The word "creamery" as used in the New York City milk trade means "milk shipping station." In Vermont it is used to mean a butter making establishment. "Grain feeding" to Vermont farmers means the employment of any concentrated bran, cottonseed meal, gluten feed, and what not. As used by the speaker the phrase is synonymous with undried (supplied wet and fermenting or fermented) brewers' grains, direct from the breweries. It were well to keep their distinction in mind in the reading of the doctor's admirable paper.

Touching cleanliness in the dairy, there are two sorts—the ideal and the practicable. The ideal is unattainable save at heavy outlay, which is unwarranted by ordinary returns. The practicable is obtainable by most if not all producers at relatively slight outlay, which is warranted by the returns now received by dairymen whose cows are of good grade. Practical cleanliness, moreover, will usually result in the making of city standard milk. To attain practical cleanliness use (1) sunlight, (2) whitewash, (3) air, (4) bedding, (5) land plaster, (6) special milk pails, (7) steam or boiling water, and (8) ice.

1. Window glass in plenty; sunlight in the barn; sunlight on the dairy utensils.

2. A yearly coat of whitewash preceded by floor, wall and ceiling cleansing.

Digitized by Google

3. Adequate ventilation, preferably the King system.

4. Sawdust, shavings, straw—and in plenty.

5. Land plaster or other chemicals to catch, fix and hold the escaping ammonia are worth more than their cost from a manurial standpoint, not to speak of their sanitary effect.

6. Pails without bottom seams or filled with solder; perhaps the sanitary pail with restricted openings.

7. Thorough cleansing of all utensils which the milk touches with steam or boiling (not warm, not hot, but boiling) water and sunlight.

8. Rapid cooling of milk and its maintenance at a relatively low temperature.

In addition to these, clean cows, clean-clad milkers, the feeding of dusty food after rather than before milking, or if before, at least an hour before milking. Prompt removal of milk from the barn helps to make the milk clean.

Dr. Darlington states that brewer's and distiller's refuse and "fermentable food" should be discarded. This dictum is based on the improper use of good materials. Kiln dried brewer's or distiller's grains are in no way harmful and are admirably and relatively cheap milk-making concentrators and should not be discriminated against, because when immoderately fed in a wet condition they have proved harmful. Silage is a "fermented product." So is bread. As well warn a mother who is suckling her baby not to eat a slice of bread as to say that silage from mature corn, fed in moderate quantities, should be debarred. Some housewives make sour bread, some farmers make sour silage. Instead of condemning in a wholesale way the most economical milk-making roughage the New England farmer has, because sometimes, when illy made and ignorantly used, it is thought to have caused damage, stress should rather be laid on its proper making and proper usage. I seriously doubt whether mature silage moderately fed ever damages a pound of milk for any normal purpose. And I candidly believe that many a physician's statement that "the silage milk upsets the baby's stomach" is based on fancy rather than fact. No doubt the milk was at fault, but that it was at fault because silage was fed is doubtful, provided the silage was made from mature corn and was intelligently fed to healthy cows.

Dr. Henry D. Holton.

Our inspector spoke about pus in milk. All the doctors know the significance of leucocytes in the blood. Virchow said that when they were found in the tissue, it was a case of inflammation. I would like to ask how many leucocytes are natural. The Laboratory has fixed the number at 500,000. If it exceeds that number, we know there is something wrong. I would like to inquire about streptococci. We have had a few cases in which streptococci appear in the milk with a large number of leucocytes. It was claimed by a bacteriologist in Wisconsin that the streptococci are of no

Digitized by Google

significance whatever. If I catch streptococci in my patients I know there is something wrong. In 500 or 600 examinations we have only found six where we found streptococci in the milk. My question is, What is the significance of streptococci and leucocytes in the milk? In one herd particularly, where the man had plenty of means and had built the barns in a model way (the cows were Jerseys), we found streptococci and a large number of leucocytes in the milk. Three of those cows had garget.

The farmers of Vermont are waking up. I had a letter a few days ago inviting me to go and meet the milkmen of a certain town. When it comes to that I think it is the best encouragement we could have.

Mr. A. A. Butterfield.

Last year I went to a milk room where there was a cream separator. On the table there were cans of cream and cans of milk, etc. I noticed something that looked queer to me. They proved to be like little mites. There were millions and millions of them. I would like to know what they were, how they came there, and how to get rid of them.

Question.

I would like to ask the doctor what experience he has had with milking machines. Our barns are in better shape than he has shown. We rarely see anything as foul as he has pictured. I have the idea that the milking machine is going to prevent a great deal of dirt from entering the milk.

Dr. Thomas Darlington.

You can get very nasty conditions from silage unless the farmer knows how to take care of it.

So far as the keeping clean from any vermin is concerned I would say that that sort of thing can properly be taken care of by the use of plenty of hot water, and if hot water cannot keep the place in a sweet condition, then use a strong solution of washing soda.

So far as streptococci are concerned, it is due to an inflammation of the udder, and the cows should not be milked. The cows so affected should be placed one side and not milked, but taken care of.

Regarding the milking machines: I have no doubt but that in the future the milking machine will be universally used. I have no doubt that there are or will be milking machines which will be proper to use and can take care of the milk properly.

The main good of discussing questions of this kind is to agitate the question; it becomes more public and you get the people interested in the subject. Gradually the solution of the whole question is found by discussion.

I supposed you had at least $600,000 for your State Board of Health. I was much surprised to find you had so little to work with.

Digitized by Google

THE LAW RELATING TO DUTIES OF HEALTH OFFICERS.

By R. A. Lawrence

The health officer occupies a peculiar position in our democratic system of government. You have probably heard the statement that the powers conferred upon him are extraordinary and unusual so many times that familiarity has deprived it of its great significance. Nearly every lawyer who has addressed you on the different occasions of your annual gatherings has exclaimed in amazement at the powers conferred upon you by our laws. But the magnitude of these powers and the importance of their wise use to the welfare of the citizens of the state justifies us in repeatedly emphasizing the unique position which the health officer occupies. A mere enumeration of the different powers conferred upon him is staggering, unless we remember that these powers have only been conferred by our legislatures with the belief that they would be wisely and judiciously administered.

From the very nature of things, the local board of health, which is supplemented by the State Board of Health, must be given great power, in order to deal adequately with acute conditions as they arise and in order to meet the emergencies which disease brings upon us. The people of the state, speaking through their legislatures, have practically given you authority to do anything that is necessary for the preservation of the public health, demanding in return that you shall exercise these powers wisely, discreetly and carefully. Just the moment that these powers are used to serve selfish ends, or arbitrarily, or even unwisely by misguided individuals, who may think they are serving the public good, the people will begin to rebel and sooner or later the powers of the health officers will be curtailed.

It is therefore highly important that you should study thoroughly the details of the laws relating to public health, and in every way possible endeavor to acquaint the public with them. Your mission is that of education. There are only a few in any community who will refuse to obey directions given by the law or by you as health officers when they realize the importance of obedience and the dreadful consequences which may follow from disregard of the health regulations not only to themselves, but to a whole community.

Occasionally there is a man who needs to feel the iron hand of the law when he seeks to go beyond its barriers, but as a rule you will have accomplished your purpose of enforcing the law when you have made the people of your several communities appreciate the importance of this law to them. There is no law upon the statute books without a reason for its being there. Something has given occasion for the enactment of all legislation or it would not have become law. We are a democratic people, governing

Digitized by Google

ourselves, unaccustomed to the exercise of authority and apt to resent any attempt to restrict us in the fulfillment of our private desires. We require a reason for doing things or not doing things that we wish to do, and so it is highly important that the health officers become acquainted thoroughly with the different statutes with which they have to deal and understand the reasons which underlie their enactment. Explain to your communities as well as you can why precautions have to be taken, why it is important to keep a careful registration of births and deaths, why men should be quarantined, why they must comply with certain standards in selling food and drink. In short the administration of the health regulations more than any other body of law upon our statute books, requires the exercise of that discretion, thought and good judgment, which is after all the highest quality that can be exercised in public office, however exalted.

The principal duties of the health officer in the past have been connected with quarantining and reporting communicable diseases, and with the registration of births, deaths and burials, and the issuance of the necessary permits, and these will continue to demand your careful attention.

Recently, however, the nation has taken another great step in advance in undertaking to protect the health of our citizens, and Vermont, following the example of Congress in the nation's capital, has adopted stringent regulations respecting the cleanliness and the adulteration of all food products, and has committed, in a large measure, the enforcement of the law touching these matters to you.

Here again, as in so many instances under the health laws, the health officer is expected to apply the proverbial ounce of prevention in order to prevent the later need of a pound of cure.

The first section of No. 143 of the Laws of 1904, known as the "Pure Food Law," provides that "No person shall sell or offer for sale any adulterated drug or substance to be used in the manner of medicine or any adulterated articles of food or substance to be used in the manner of food or drink for man or domestic animals," and then in the amendment adopted in the last session of the legislature in No. 176 of the Acts of 1906, the terms "drug" and "food" are defined and are made to include "Any substance or mixture of substances intended to be used for the cure, mitigation or prevention of disease of either man or beast," and "All articles ....used for food, drink, confectionery or condiments by man or beast." Surely a most sweeping and comprehensive provision.

The various standards of different foods and drugs are fixed either by legislative enactment directly or by the regulations adopted by the State Board of Health under the authority of the legislature. I will not attempt to go into the details of these regulations. The State Board expects to have ready for distribution very soon pamphlets containing the new food laws after all the revisions have been made, and these should be in your possession and studied until you are thoroughly familiar with the whole subject. You will also be furnished with a number of these pamphlets for

Digitized by Google

distribution, and here let me emphasize again the importance of educating the community, of making the law known to the man in the street, and explaining to him the reasons for what might otherwise seem to him an annoying and uncalled for interference with his rights.

Under this act it is provided in Section 6 that "every person offering or exposing any drug or article of food within the meaning of this act shall furnish to any member of the State Board of Health or any local health officer, who shall apply to him for the same and tender him its value in money, a sample sufficient for the purpose of the analysis of such drug or article of food," and any one that interferes with any health officer in the performance of his duties in this respect is subject to a fine of not more than $50 for the first offence and $100 for each subsequent offence.

It is very evidently the intention of the law that the local boards of health shall see to it that the articles offered for sale as food or drugs in their various communities comply with the requirements in this line. The State Board of Health will no doubt give you instructions as to the enforcement of the law and in fact has already commenced the examination of the different standard articles of food offered for sale at various places in the state, and the results of this examination have been published in the BULLETIN from time to time. When certain brands of baking powder, for example, have been once analyzed by the State Board of Health and the results published you would not ordinarily have occasion to have other samples of the same brand examined for a considerable interval, unless something occurred to arouse your suspicions. The examination of other goods which come in sealed packages can be made in a few instances for the whole state, but other articles of food, such as sugar, tea, coffee, milk and various other articles which are sold in bulk must be examined from time to time as they are sold in order that there may be some certainty as to what is contained therein.

The State Board has been very slow in instituting prosecutions for violations of the pure food law, having taken the ground that its provisions were not yet well enough known and understood by the public at large to warrant drastic measures, and their example in this matter I would commend to you.

Here again let me emphasize the fact that the prosecuting officer cannot go farther than he can be sustained by the sentiment of his community, and at first it is highly essential that you should educate the communities in which you live to the importance of the pure food law, and the immediate effect which the obedience or disobedience of these regulations may have upon the public health. This law affects not only the merchant, who sells goods in the store, but the farmer who turns off milk, honey, maple sugar, apples and any other product from the farm. He is not allowed to sell his produce for something which it is not; he cannot adulterate his sugar; his milk must conform to the standard fixed by law.

We are in the midst of a great wave of reform, which has swept over the

Digitized by Google

country, and we have all been anxious that those who have occupied high places in the world of finance and in the world of politics should reform, and cease to walk in the ways that an enlightened public has emphatically condemned.

We are all enthusiastic reformers when it comes to the other fellow but how is it about ourselves? If we, who live here in Vermont in an agricultural state are in earnest in our reforms, we must begin by making the products of Vermont farms the purest that can be produced and make the Vermont label the synonym for honesty and fair dealing in trade. We must each one take home to ourselves the lessons which the revelation of mismanagement in the high places of the country has taught. The last few years teach us, if they teach anything, that in small affairs, as well as in great, honesty is the only permanent and enduring basis of any success, that fair dealing and a reasonable regard for the welfare of our fellowmen in the community where we live, in the state as a whole, in the nation, and throughout the world, is the basis upon which the whole structure of civilization rests. The pure food law registered by legislative enactment is the awakened conscience of the country upon one phase of this question. Slowly, little by little, as you can make your way, it will be your duty to see that the food for us in your communities is what it purports to be and is free from anything that may be harmful. It will be your duty to see that the medicines and drugs, which are offered for sale, comply with the standards which science has established. It is all very well for us to resolve that we will have pure food and enact by-laws that we shall have drugs that conform to the United States Pharmacopœia. We will all join in the demand for such legislation, but it is worth nothing if it is not enforced and with the enforcement will come the pinch. Many of the very people, who have been demanding these reforms, will resent their application when it becomes personal to them. But we must not halt at this. To you is committed the duty of seeing that the community adjusts itself to the new standards which have been set. See to it that you perform it wisely and well for upon your own prudent administration the success of the law depends.

Our conception of what the state should do for us in changing with the relaxation of the hard struggle for existence, which the increased prosperity of our country has brought to many of its people, and we are turning our attention more and more to the regulation of our daily living by the state upon the best and wisest lines; we are beginning to grasp the idea that the authority of the state, when resting in the people of the state, is not a menace to be dreaded, but an instrument to be used for the expression of our common desires. The realization of the close relation of the death rate to pure food and water and air and wholesome surroundings has aroused us to demand that the state exercise an increasing amount of regulation and that it shall more and more through its officers watch over, inspect, and prevent conditions which are a menace to the public in any form.

Digitized by Google

Let us proceed carefully, but firmly, remembering that we must justify these laws and our enforcement of them to the people, who have commissioned us, and endeavoring to give such an account of the trust which has been reposed in us that all our citizens may be justly proud of Vermont's care for the health and well-being of her people.

QUESTIONS ANSWERED.

I wish to preface my answers with the statement that, as you probably are aware, these answers are given off-hand. They simply represent an opinion and the best judgment I can give you in the short time at my disposal to consider them.

Before proceeding to answer the questions, there are two or three matters that I wish to call to your attention in a general way.

I presume that most of the health officers in the state, to say nothing of the people in the community and the town officials generally, have forgotten or never knew the very broad powers that are given to the health officer and the State Board of Health with regard to schoolhouses.

Section 8 of Act 113 of the Acts of 1902 provides as follows:—

"Section 8. The State Board of Health shall as often as it judges to be necessary, issue to the local boards of health its regulations as to the lighting, heating, and ventilation of schoolhouses, and shall cause sanitary inspections to be made of churches, schoolhouses, and all places of public resort, and make such regulations concerning the same as it shall deem necessary for the safety of persons who may attend schools or services therein or resort thereto. And all schoolhouses, churches, and public buildings hereafter erected shall conform to the regulations of said State Board of Health in respect to all sanitary conditions for the public health, and all persons, corporations, or committees intending to erect any public building herein named shall submit plans thereof so far as to show the method of heating, plumbing, ventilation, and sanitary arrangements to the health officer, and procure his approval thereof, or the approval of the State Board of Health before erecting said building."

So you will see that by this law plans must be submitted and approved either by the health officer or the State Board of Health, before permission is given for the erection of any building of this character. Local health officers should see that this law is complied with.

In taking samples, as provided by the new Pure Food Law, precaution should be taken by the health officers to follow the law strictly in every particular. You should proceed in taking these samples just as though you expected to be called to the witness stand to testify in a suit at law.

Our criminal law affords every protection to the man who is charged with the crime, and every presumption is in his favor. Therefore when you take a sample, you should take every precaution to prevent any question being raised as to the identity of the sample which you take. It should be sealed

Digitized by Google

in the presence of the man from whom you procure it, and you should carry your apparatus with you for that purpose. It should be sealed in such a way that you can testify, if called upon, that you sent the specimen with your seal upon it to the laboratory for examination, and you should be able to describe your seal in such a way that the person at the laboratory, who receives and examines it, can testify by describing the seal, that the same seal was on the package intact, when he opened it for examination at the laboratory. When you think there is any likelihood that adulterated food will be found or that contest of any sort will be raised over the sample that you take, I should recommend that you have a third person of good standing in the community present at the time of taking the sample, so that he can testify as to what took place, if any question should be raised about it.

Attention to these details may often make the difference between the successful or unsuccessful trial of a criminal case. If there is any doubt in your mind as to how to proceed, do not hesitate to consult a lawyer or the State Board of Health for specific instructions.

There is another provision of the law, which is very important, requiring all druggists to keep a register, in which they shall record the name of the purchaser, date of the purchase, and the amount purchased, whenever a sale is made of certain poisons, which are named in the Statute.

A case which recently occurred in Rutland illustrates the value of such a record. A man died suddenly and when the health officer was summoned no one was able to say just what the cause of death was, although appearances indicated that he had died from some sort of poison. The question at once arose as to whether a crime had been committed. By consulting the registers of the local druggists, we were able to ascertain that this man had purchased strychnine of sufficient quantity to produce death on the same day that he died. With this record as a clue an autopsy very soon determined that the man died of strychnine, and without doubt administered by his own hand.

Without such a record a long investigation might have been necessary to satisfy the authorities that no one else was involved in the cause of his death. It is therefore important that the local health officer should see to it that the druggists in their towns keep with care the register which is provided by law.

Question 1. What course should be taken with a house owned by one person and occupied by another as tenant, which has been condemned as unsanitary and the owner refuses to make the necessary repairs to put it in sanitary condition, and the tenant refuses to move so that these repairs may be made?

Answer. Section 13 of No. 113 of the Acts of 1902 covers that point. When you have such a case, call a meeting of the local board of health, and make a complete record of the transaction of the board. Explain the case; tell what repairs are needed to put the building in a sanitary condition, and

Digitized by Google

the board will undoubtedly authorize you to order the owner of the building to put it in a sanitary condition, or in other words, to abate the nuisance. You will deliver this order in writing to the owner of the building. If he refuses to abate the nuisance, the preceding section applies. Section 12 of No. 113 of the Acts of 1902 provides "If any person or corporation shall neglect or refuse to comply with any written order of the secretary of a local board of health, which he has authority to make under this act, such person or corporation shall, on conviction thereof, pay to the treasurer of the state a fine of not more than one hundred dollars and not less than five dollars. In case of such neglect or refusal to comply with any such order, the local board of health shall cause it to be complied with at the expense of the town or city it represents and said expense may be recovered of the person or corporation whose legal duty it was to comply with such order."

After you have applied this rule two or three times, you will not have any more trouble, I am sure. I should have nothing whatever to do with the tenant, but proceed against the owner of the premises.

In this same connection, I am asked—

Question 2. Would the expense of cleaning a place precede a mortgage on a place or act as a lien?

Answer. I fail to find any section of the statutes which makes such an expense a lien on property.

Question 3. Dr. F. Fletcher, Bradford, Vermont. I asked that question and I want to know if the expense could be collected from a man who was worthless?

Answer. I don't believe you could get it. The law does not make it a lien, as far as I can find.

Question 4. Can a village corporation by a vote in meeting require sewers to be placed in streets and all drains and sewers from dwelling houses to be connected with such main sewer?

Answer. Section 13 of No. 113 of the Acts of 1902 deals with this. It provides in paragraph 4 that the local board of health shall have power "To require every person owning a dwelling house or other building abutting on the public street in which there is a public sewer to have all drains and sewers from said house or building connected with such street sewer and when said board shall deem the same necessary shall provide said house or building with plumbing in accordance with the plumbing regulations of the State Board of Health and shall make the necessary connections between the plumbing and such public sewer. Any householder or owner of a building as above specified, who shall fail to provide such plumbing and sewer connections after receiving a written notice authorized by the local board of health and signed by the health officer and a reasonable time has elapsed for performing said work shall forfeit and pay to the town or city not less than ten dollars nor more than one hundred, and the local board of health shall provide such building with the necessary plumbing and sewer con-

Digitized by Google

nections, and collect the cost of such work and materials used of the owner. Either party may appeal to the State Board of Health, who shall, after proper inspection and consideration, decide as to the necessity of providing such plumbing and making such connections, and their decision shall be final." So you will see that the vote of the village is not necessary. The local board of health of the town has the power to perform this work without any action by the village.

Question 5. Can a health officer knowing a poor tubercular patient empower a physician to treat this patient and collect his bill from the overseer of the poor?

Answer. As tuberculosis is now recognized as a contagious or infectious disease, the health officer would have power under paragraphs 2 and 3 of No. 113 of the Acts of 1902 "to furnish medical treatment and care for such sick person at (his) own expense, if of sufficient ability to pay, otherwise at the expense of the town or city." The bill would not be payable through the overseer of the poor, but through the local board of health. The overseer of the poor has no connection with the acts of the health officer in a case of this kind, unless he steps in voluntarily and renders assistance through his department.

Question 6. Suppose this patient lived in a town of which he was not a legal resident, and the physician treated him without notifying the health officer of the town of which the patient was a resident, could he then collect the same as before?

Answer. Section 14 of No. 113 of the Acts of 1902 provides that "The expense incurred in the medical treatment and care of any sick person under this act by the local board of health or the health officer, may be recovered of any town in which said sick person has a legal residence, in the same form of action as though furnished by the overseer of the poor of the town furnishing such aid.

You will notice that this act provides that expense incurred by a local board of health or the health officer may be recovered. If a physician treated a patient without being authorized by the local board of health, he could not recover the expense of such treatment under any provisions of the laws relating to public health.

This section does not state whether the local board of health should notify the town to be charged with the expense, as is required in the case of an expenditure by the overseer of the poor, and I would not advise any local board of health to proceed under this section. If assistance is needed for a sick person under such circumstances, the better way would be to have application made to the overseer of the poor, who generally is a man who is acquainted with the requirements of law as to notice, etc., so that he will take the proper steps to legally charge the town, which ought to pay the expense of the person's sickness.

A town would be much more likely to have a good case, if the procedure

Digitized by Google

were to be taken through the overseer of the poor, who is accustomed to such things, than through the local board of health, which has only a few cases.

Question 7. Is it within the intent of the law to appoint a deputy health officer in a village where there is a health officer and the party asking for the appointment of a deputy health officer is an undertaker, and wants the appointment so that he can issue his own burial permits?

Answer. Section 4 of No. 140 of the Acts of 1904 provides that "The State Board of Health may appoint a deputy health officer for any town or city, upon the written request of a majority of the local board of health, which deputy health officer shall have no authority or duty except to issue certificates of permission for the burial, entombment or removal of dead bodies as hereinafter provided."

As the health officer constitutes one of the four members of the local board of health in the town, it would be necessary for all three of the selectmen to unite in a request to the State Board of Health to have a deputy health officer appointed against the wishes of the health officer.

After the application is made, the appointment of a deputy health officer lies in the discretion of the State Board of Health. The purpose of this provision is to serve the convenience of communities where the town or city is divided in such a way by mountains or other natural barriers, as to make it extremely inconvenient and often difficult for a person in one part of the town to make the journey to the health officer in another part of the town.

Question 8. If there is a deputy health officer appointed in a village where there is a health officer, can he legally issue burial permits when the health officer is in town and accessible?

Answer. Section 5 of No. 140, Acts of 1904, gives the deputy health officer the same authority in this respect that the health officer has. If any local health officer feels that his work is unduly interfered with by a deputy health officer, I would suggest that he state the situation to the State Board of Health, who, I am sure, will do everything in their power to uphold and assist a local health officer who is conscientiously attending to his duties.

Question 9. Can a local board of health compel the reconstruction of an unsanitary school house?

Answer. Under the provisions of No. 44 of the Acts of 1904, the State Board of Health may condemn a schoolhouse or outhouse as unfit for occupation or use, and this act provides that if after written notice served by the chairman of the board of school directors, or other person having such school in charge, the building in question is occupied for school purposes, any person violating the order of the State Board of Health shall be fined not less than five dollars nor more than fifty dollars. The school-

Digitized by Google

house cannot be again occupied for school purposes until it has been repaired and its sanitary condition approved of by the Board.

If the local authorities refuse to put the schoolhouse in sanitary condition, after it has been called to their attention by the State Board of Health, recourse might be had to the school law of the state, which provides that schools should be kept a certain number of weeks in each year in a suitable place. The State Board of Health can condemn an old schoolhouse and prevent its occupation until it has been made sanitary and can also refuse to approve of the plans of a new schoolhouse until they are satisfied from a sanitary standpoint.

Question 10. Can I compel a town to get new seats in a schoolhouse?

Answer. I think the State Board of Health can step in and treat the question of school seats, if they are injurious to children, as they would treat any other unsanitary condition in a school house. Report such a case to them and get their directions in the matter.

Question 11. Cannot the school seats or outhouse be condemned under the nuisance act?

Answer. I think without doubt an unsanitary outhouse could be proceeded against and abated as a nuisance, whether it was attached to a schoolhouse or any other building, and it is possible that in some cases school seats might be construed to be a nuisance, and might be abated as such, but I should question whether it would be wise to attempt to proceed against improper school seats as nuisances.

Question 12. Can I as health officer compel a town to remove a schoolhouse?

Answer. The State Board of Health has power, as has just been stated, to condemn an unsanitary schoolhouse and prevent its use, and if its continued existence in the place where it was, constituted a nuisance, undoubtedly the local board of health would have power to act and abate it.

Question 13. Would a health officer be warranted in pouring kerosene on the carcass of condemned beef in order to insure the fact of its never being used as a food by unfair means?

Answer. This question falls under the Pure Food Law. If the carcass is designed for the food of man and is found unwholesome, some disposition of it must be made so that it will not be used for that purpose. The health officer's duty is to destroy the carcass so that no one will have a chance to eat it. This question has never been suggested to me before, but I do not see why it would not be as legitimate to pour kerosene on the meat, if that will render it unfit for food, as to take any other course to accomplish the same end.

Question 14. Would a health officer be justified in finding a case of scabies in a public school in ordering it to go home?

Digitized by Google

Answer. Under the second paragraph of Sec. 13 of No. 113 of the Acts of 1902, I think he would.

Question 15. In a poor family, could he order such a case to be treated at the expense of the town?

Answer. Under paragraph 3 of the same section, he is authorized to furnish medical treatment and care when persons are infected with contagious or infectious disease at their expense, if of sufficient ability to pay, otherwise at the expense of the town or city.

Question 16. In one town the health officer died and the town clerk was so seriously sick that he could not issue a burial permit. There was no deputy health officer in the town. How could a burial permit be secured for the burial of the body of the former health officer?

Answer. There seems to be no way provided by law for meeting this emergency. I would suggest that if such a thing happens, one of the town authorities should immediately telephone to the Secretary of the State Board of Health and inform him of the situation. If the selectmen could agree at once upon a new man for health officer, they could give his name to the Secretary of the State Board of Health over the telephone and be informed of his appointment in the same way, the necessary papers being exchanged later by mail. In this way a new health officer could be obtained with very little delay, and he could undoubtedly act before receiving his papers.

If it is impossible to get into communication with the State Board of Health, and have a new health officer appointed in time to issue a burial permit, I would suggest that in such a case as this, the remaining members of the local board of health, who would be the selectmen of the town, sign a burial permit, stating why it is signed by them and not by the local health officer or town clerk.

While this would not be strictly within the letter of the law, it would fulfill its spirit, providing a certificate for the protection of the public from contagious disease and at the same time furnishing the record for the town clerk.

Question 17. Has the health officer in one town the right to give a burial permit in another town?

Answer. A burial permit should be issued by the health officer in the town in which the person dies, and this permit is sufficient authority for burial in any town in the State.

The health officer of one town cannot give a permit for the removal of a body from another town, or for the burial of a body when the death occurred in another town.

Question 18. Who pays the expense of the health officer when he performs an autopsy?

Answer. It would have to be ordered by your local board of health and paid by your town. In a criminal case you should apply to the State's

Digitized by Google

Attorney of your county, and if he finds that the case warrants an autopsy, he will obtain the necessary order from the State pathologist to perform it.

Question 19. Is a notice of any contagious disease legal, if given over the telephone?

Answer. The law simply says that the attending physician or head of the family where the disease occurs shall notify the health officer within a reasonable time. The courts have held that we can sue and collect damages for breach of contracts made over the telephone, and I do not see why a notice of the kind in question given by telephone would not be legal. I should advise in every instance, however, that the health officer immediately obtain a written notice to the same effect, whenever he receives notice of the contagious disease by telephone.

Question 20. Last February a man died in our town, and I gave a permit for entombment. The body was left in the vault until the seventh day of May, when I gave a permit that they could remove the body on a certain day. St. Johnsbury refused to accept it. What I want to know is if such a permit is legal, if properly written out, and is it legal if I simply fill in the blanks in a printed form, or is it necessary that it should be in writing?

Answer. The law does not require you to write your permits out. You may fill out the blank forms provided by the State Board of Health. The State Board of Health has provided a form of removal permits, so that if you will fill out one of these and sign it, it would be considered legal. It is highly desirable that all burial and removal permits should be issued upon blanks of uniform size and alike in every other respect, and the only safe way for a health officer to do is to issue such permits only upon the blanks provided by the State Board of Health.

Question 21. Is a second permit necessary from me as the health officer before a body can be removed from a tomb, after I have given the first permit for its entombment?

Answer. Yes, certainly.

Question 22. Last winter a person died and the body was buried; the permit was supplied as usual. In some way the husband of the woman who had died, heard that there was water in there around the grave and he wanted to remove the body. I gave orders as health officer to have that body removed. Was I right?

Answer. Whenever a body is removed from a grave, whether it is placed in another grave in the same cemetery or not, a written permit must be first obtained from the health officer and the same formalities must be observed when a body is removed from one spot in the cemetery to another spot in the same cemetery, as when it is removed from one town to another.

Question 23. Is wine measure the legal measure for milk?

Answer. Section 4300 of the Vermont Statutes provides that the standard measure of milk shall be wine measure.

Digitized by Google

Question 24. A short time ago a body was on its way to a western town for burial, having come from outside of my town, but the railroad people refused to take it further than my town. I issued a transit permit on one of the old forms; had I this authority?

Answer. There is no provision in law for such an emergency, but you acted properly in exercising your common sense to relieve an unpleasant situation. I should doubt if the railroad company had a legal right to refuse to transmit a body in this state, which was accompanied by a proper removal permit issued in accordance with the law of this state. When the body gets beyond the borders of this state, of course the persons transporting it would have to comply with the law of each state which they passed through with the body, and it is probable that the refusal of the railroad company to transmit the body further was due to its knowledge that the burial permit which had been given failed in some way to comply with the law of some of the states through which it would have to pass. The railroad companies generally have rules and regulations, which they have themselves adopted by common consent, governing the transmission of bodies. These rules they have adopted for their own protection under the laws of different states, and a compliance with our state law is not always a compliance with the rules of a railroad company.

I should advise a health officer when a body is to be removed by means of a railroad to inform himself of the requirements of the railroad company and to comply with them, as well as with the state law, whether he is legally obliged to do so or not, in order to relieve relatives and friends accompanying the body from trouble.

Question 25. I have filled out burial permits in this way when the body is going to another town: "Permission is given for the removal and burial of this body." Should the health officer of the town to which the body was going allow the body to be buried without a further permit from him?

Answer. Section 5 of No. 140 of the Acts of 1904 provides that he may.

Question 26. What constitutes a record? Are the health officers' stubs on his certificate books a sufficient record for him to keep?

Answer. The stubs may be a sufficient record of the issue of burial permits, death certificates, etc., but they are not a sufficient record for the transactions of the local board of health. I am surprised to be informed that so many local boards of health do not keep records of their meetings. It is a very important matter. If you proceed to abate a nuisance or to take any other action, which the local board of health is authorized to take, and the case should get into court, one of the first things that would be asked would be for the record of the action of the local board of health. The records should state that the local board of health met at a given time and place; that certain persons were present, naming them; that certain business was transacted, indicating clearly what the motions were and how they were adopted, and that the meeting adjourned either to some given time or place, or without day.

Digitized by Google

The secretary, who is the local health officer, should sign the minutes of each meeting as a true record of the meeting. Then if any matter comes up regarding any business transacted at any of these meetings, you have an accurate record and can know exactly what transpired.

Question 27. Do I understand that I, as health officer, can give more than one certificate upon one physician's certificate?

Answer. You can give a permit on one doctor's certificate for entombment, then one for burial, disinterment and reburial. You can issue four certificates.

Question 28. Is it possible to issue one certificate embracing all four at first?

Answer. You should have a separate certificate each time. This is a very good requirement, as there is in this way a record of each move and the body can be traced from one place or one grave to another or to another grave.

Question 29. Suppose a Vermonter dies outside of the state, can a health officer of Vermont bury that body or not?

If a person dies outside of the state of Vermont—New York state for instance—the health officer of Vermont must get a permit from the town where the person died before he has the right to bury the body. New York state may not have the same regulations regarding interring bodies. The laws of that state as well as our own, must be complied with.

Dr. H. D. Holton:—

Three or four years ago a committee of the Funeral Directors Association, the National Embalmers Association, the Baggage Association, the Conference of State and Provincial Boards of Health, considered the transportation of dead bodies and certain rules were formulated. New Hampshire, Rhode Island and Connecticut have adopted them. Some questions have arisen in transporting bodies into the West when they did not have this form of permit of transportation and the bodies have been stopped. This matter came up in Washington recently and all the states in the Union have been asked to adopt these rulings. The State Board of Health of Vermont have been considering the matter and these rulings will probably be adopted by us and sent to every health officer to be used.

Dr. H. W. Bacon, Eden, Vt.

A health officer is notified that a cow has been butchered which looks tubercular. The meat isn't all right. I suppose the butcher has to notify the cattle commission. I wish to ask who should be notified if the condition is not quite clear.

Digitized by Google

Dr. H. E. Hunt, Hinesburg, Vt.

Is it within the intention of the law to appoint a deputy health officer in a village where there is a health officer? The first selectman asked the State Board of Health to appoint a deputy health officer, so they made the appointment. This has made considerable friction with the health officer. Now, if such a deputy is appointed, can he legally issue burial permits when the health officer is in town and acessible? If the law does permit such a thing, I think we ought to petition the State Board of Health to remove such a deputy.

Dr. E. K. Clark, Castleton, Vt.

Last year an undertaker in a neighboring town came to me and asked me to issue a burial permit; he handed me a death certificate. I said: "When was that body buried?" He said: "Yesterday." I said: "I do not propose to put my neck in a halter because you have yours in one."

Dr. W. H. Bacon, Eden, Vt.

Is it right to have a relative report a death of a person from pneumonia when death was due to heart failure?

Mr. S. W. Butterfield, Weathersfield, Vt.

What shall I do when a sexton says to me that the body was received on such a date and that he wants a burial permit?

What shall I do? The humane officer killed a horse in my town and then notified me to take care of it. Is it my business or the humane officer's?

Dr. H. W. Bacon, Eden, Vt.

What shall I do for lice? What shall I do for croupy cough? I am not certain whether it is whooping cough or not. This cough seemed to be spreading when I left. This cough is a sort of croup but has been assuming a whooping cough. There is no history of whooping cough from surrounding towns. I think it is a croupy cough. Would it come under the health officer's jurisdiction to interfere with the children attending school, not being sure regarding its nature? I was requested to ask this question at the meeting. What shall I do? Whether I shall keep those children out of school or allow them to go?

Digitized by Google

DISCUSSION OF DR. STONE'S PAPER, PUBLISHED IN PRECEDING BULLETIN, ON THE WORK OF THE LABORATORY.

Discussion by Hon. C. C. Fitts, Brattleboro, Vermont.

I will confine my discussion to the work of the Laboratory in its relation to the administration of the law.

It has been my privilege and duty during the last two and one-half years to have more or less to do with the penal laws and it has brought me in close touch with the Laboratory of Hygiene so far as it relates to that branch of their work.

Somebody has said that the first thing to be considered is: "How much does it cost?" How much does the Laboratory save the state of Vermont in the matter of the administration of the law? In deference to Yankee sentiment, I want to tell you gentlemen just how much is being saved in dollars and cents by the work of the State Laboratory. It is not possible for me to tell you exactly, but I will give you an approximate idea. I can give you some estimates which are conservative, based on what work has been performed in numerous instances and compare it with what it would cost if we did not have the Laboratory of Hygiene.

In the administration of the criminal law whenever there was a question which would involve a chemical analysis, it was necessary, as you all know, before the establishment of the Laboratory, that some chemist be employed at some private laboratory to do this work. You can readily understand that for the most part this work had to be done outside of the state of Vermont. There were not many well equipped chemical laboratories in this state. I recall one case where the state of Vermont paid $1,300 to one chemist for his analytical work and testimony. I recall another instance where $800 was paid. There never was any specific account kept of these expenses but they were included in the court and state expenses.

Regarding the pathological work: The pathologist performs the autopsies and his services as an expert, and in testifying in trials, is an important item which the Laboratory is saving the state of Vermont. I have not taken any steps to find out the amount of work done in other lines but I know of the most important work which bears upon the administration of justice. I have, for the last three years approximately, had to do with all the homicide cases in the state of Vermont. Taking into consideration the autopsies, the chemical analyses and pathological work, and assuming that outside experts would otherwise have been employed to meet the requirements of justice, and adding to all that the duties imposed upon the chemist and pathologist of the Laboratory as expert witnesses, it is safe to say that the state of Vermont would have expended $6,000 in

Digitized by Google

the last two years for services which have been performed by the officers of tne Laboratory. It is not certain that that amount would have been expended because a great deal of this work would not have been done at all. I will say, however, that there has been nothing done but what was necessary, and if it had not been done, there would have been a failure of justice. As a matter of dollars and cents, the state of Vermont has been saved that much in the last two years because it has had a Laboratory of Hygiene and efficient officers to serve us there. But the real vital question for us to consider is the real value of this service. If it costs twice as much as though done outside the state and it is done better and the results are surer, it is beyond all question of expense. The aim of all courts should be, and is, to ascertain the truth. The work of every official is to find out what are the facts concerning matters which are brought to his attention. The aim of a state's attorney or an attorney general is not to see that a man is sent to prison, but to ascertain the truth and have the law administered accordingly. The first thing for the state to do is to get at the truth, where there is suspicion based upon inference, and to have the machinery at hand to determine whether such suspicion is well grounded, and just this is one of the most beneficent features of our State Laboratory.

There was a suspicion in a little town not very far from here that a man was poisoned by a member of the family, and the story was current that the actions of this member were very queer. The first thing to be done was to issue an order for the pathologist of the Laboratory of Hygiene to perform an autopsy upon the body. The man's body was exhumed and the pathologist performed the autopsy, assisted by the chemist. Exhibits were taken to the Laboratory in sealed containers by the pathologist and examined, and it was ascertained that that man died from apoplexy and there was no trace whatever of any poison in that body. This work cost the state a little something, but it was doing justice to that family. It has settled the minds of that community and has removed a cloud which would have hung over that family all their lives.

There are a good many people who are held under suspicion just because the truth was never ascertained. The truth ought to be ascertained and in the first instance. The law protects a man and the burden of proof rests upon the state. If the truth can be ascertained, it ought to be ascertained before he is even charged with a crime.

When we are figuring what the Laboratory has cost, I did not include and could not include the immense saving that this institution has been to the state of Vermont in preventing trials. Cases every year arise where these suspicious cases would lead a grand jury to find an indictment. If there is a suspicion in their minds, they are prone to put the man on trial and let the truth be developed in the trial court. With the help of this institution, many a suspicious case is cleared up before it reaches the grand jury. This is of the utmost importance in the economical administration

Digitized by Google

of justice. I can recall instance after instance where the researches at the Laboratory of Hyiene have determined what was the cause of death and saved an individual an indictment and saved the expense of a long trial to the state, and saved the man perhaps from financial ruin and prevented the stigma on his name.

The researches at the Laboratory are for the benefit of the state and its people. What we hope for and what we believe is coming from the work of this institution is the culling out and removing from the courts of justice that prejudicial class of evidence with which we all are familiar, that is, partisan expert testimony. I know it has been the purpose and effort of the officials of the Laboratory to be absolutely impartial. I am sure it is coming to be recognized that when the pathologist comes into court and testifies or when the chemist testifies, it is accepted beyond question that that is the truth; that is the goal at which the law is aimed. Their testimony is an expression of the truth as the witness understands it. With conscientious service given by these officials, we are able to get at the facts in a quicker and more concise manner.

A remarkable record has been made by our Laboratory since I have known of its work. There is not to my knowledge a single instance during the last two years where the work of the Laboratory of Hygiene has been at fault; where the testimony of the officials has been questioned; or where the jury or the court found a fact to the contrary. There has been but one acquittal, and that was where it did not involve the work of the Laboratory. There have been several indictments where further research work has settled the matter beyond a question. Without exception, the tetimony of the officials of the Laboratory, the pathologist and the chemist, has been accepted as true and judges and jurors have made their findings on the facts stated by these men.

Provided we have no facilities at hand for the performance of these duties and a man is charged with murder! The state employs an expert from Harvard and the respondent employs another from Dartmouth. Each expert is acquainted with only one side of the case; the result is, nothing very satisfactory. The aim of the officials of the state should be to create confidence in the courts of law whether it be to acquit or convict.

If it can go on, year after year, with the record which we have had of the last two years, case after case being tried, the results of the Laboratory being accepted beyond a question as correct, what a step it will be toward gaining the confidence of the people in their courts of law.

When a sudden death occurs, we know who is to perform the autopsy and who is to testify. We know right off where the order goes—to Dr. Stone—to perform that autopsy. And with him goes Professor White. As soon as the order is issued, they go right at it. We know where the exhibits are and how they are taken care of. It does not take ten or twelve people to make it known that this stomach or that heart came from the man who died. These specimens are sealed as soon as the autopsy is

Digitized by Google

performed in the presence of the witnesses and are taken back to the Laboratory by these gentlemen who have performed the autopsy and are placed immediately under lock and seal for future examination.

I would like to make a few suggestions to health officers. After the new law requiring the pathologist to perform these autopsies went into effect, circular letters were sent to the health officers calling attention to the new law. In cases of suspicious death or of any criminal charge, it is important to have the Laboratory and its officials acquainted with things just as they existed; not to have anything disturbed. If it was a violent death, let the clothing remain on the body. There may be this little thing or that little thing which may be determinative one way or another. Care exercised at the moment is of the utmost importance. In a case which is likely to require the services of the prosecuting officer, the evidence is kept in hand so that the officials of the state may have it when they come to make an autopsy or to take exhibits for examination. Then when the case is tried in court, absolute proof of the identity of each exhibit makes it easier to get at the truth.

May I urge upon you consideration of the question of legal responsibility of municipalities for the proper protection of the healthfulness of their inhabitants? The time may not have come, but it is near, when the courts will hold towns and states responsible for the damages suffered by individuals on account of the negligence of the local board of health and the health officer. The time is almost at hand when the city of Burlington or the town of Brattleboro, and every town and city in the state, will be liable to you and to me if it permits its water supply to be laden with typhoid germs. They will be chargeable with negligence and will be responsible for damages.

The three great inalienable rights of the Englishman are the rights of life, liberty and the pursuit of happiness. The first and highest of these rights is the right of life and health. More and more it is being recognized that it is not only my neighbor's right to be protected from my violence, but as well from my negligence. It is the right of the citizens of Vermont to be protected from physical harm whether that harm comes from force applied by some other person or from disease engendered because of the negligence of those whose duty it is to protect our health.

Every health officer has to do with the administration of the law, and he should know that the municipality which he serves may be liable for any damages which occur through his lack of care and diligence.

The strong arm of the state will support the efforts of local officers to enforce the laws for the protection and preservation of the public health.

Digitized by Google

WORK OF THE LABORATORY.

Discussion by Dr. F. E. Clark, Burlington, Vermont.

I feel that it is quite useless for me to attempt to add anything to what has already been said. Dr. Stone has presented to us a very excellent paper and Hon. C. C. Fitts has discussed the medico-legal branch very fully and admirably.

Have you ever asked yourself this question: What important position does the State Laboratory of Hygiene fill?" Have you analyzed it carefully? Many of you, who have practiced medicine much longer than I have, remember when we had no state laboratory and how difficult it was for us to arrive at a conclusion which to-day is comparatively easy and which is without any expense to ourselves. I wonder how many of us feel to-day as we did when Dr. Linsley took the first steps toward the establishment of such an institution. We thought it was sort of a fad on his part that perhaps would not help the masses, but a few. This institution has proven itself beyond any question of doubt to be of great benefit to the whole state of Vermont. Many who were lukewarm when the subject was first agitated, have learned to realize that it is a means of education in itself.

It is a center of education. You and I are better physicians because of its advantages and the contact with these men in the Laboratory and the work they are doing. Many of you graduated before there was any course given in bacteriology or pathology. There was considerable said about chemistry but you only knew the name of the science and had nothing of a working knowledge of the same.

We have an opportunity to become familiar with the subjects of bacteriology, pathology and chemistry. A man who can find out a truth if he does not know it, is clothed with a certain amount of knowledge which is of great value. And the State Laboratory fills that position for you and for me.

The outcome of this State Laboratory is the establishment of this School for Health Officers. The advantages and valuable instruction which we get at this School without any expense to us are inestimable. You are paid to come here and to listen. If there is a man holding the position of health officer who, possessing so much inertia, will not come here and be paid to listen and to be enlightened, I say that that man should be retired, for he is of little value to himself and much less to the community in which he lives.

How can we make the best use of our Laboratory? This is a question we should analyze very carefully. The first thing is to be familiar with its object, conversant with its work, and always in harmony with its work and its workers. They rely upon your good judgment and upon your hearty support. You have very careful instructions accompanying each

Digitized by Google

and every outfit which you obtain, as to how samples should be taken and transmitted in order to be in a proper condition for their analysis or examination. You have instructions how to take a specimen of blood for typhoid fever; how to take cultures for diphtheria examinations and how to collect samples of water for analysis. These directions are very explicit, very concrete, and no man, who can read, ought to make a mistake. If you could see how some materials are sent to the Laboratory and how sensitive some men are when the officials say they can do nothing with the material, you would certainly be more painstaking. I have seen specimens of water sent there in old, dirty vinegar jugs, corked with an old cork. What kind of an analysis would you expect from such unscientific means of transmittal? They simply will not touch such specimens, but immediately write the sender the conditions under which water is examined and at once send the proper container for a new sample. It is absolutely necessary if you wish to get correct findings that are going to be of value to you and your town, to conform to a certain line of technique in taking the samples as laid down in the printed instruction. You should not withhold any information that you possess with reference to these specimens. If we withhold some particular or important facts, they can only state their findings and they will not draw conclusions, for it would be very unwise for them to do so. Careless indifference with reference to following all the details and data makes it very difficult for the Laboratory to do the most efficient work.

I would like to say something about the limitations of the Laboratory. Your diagnosis should not be based wholly upon laboratory findings. For instance, suppose you have a case of diphtheria that you have carried along for a month or perhaps longer and you are very anxious to raise quarantine. You use antiseptics on the throat and then take a culture and send it to the Laboratory. You get a negative report. Many times, however, they can tell when an antiseptic has been used just prior to the taking of the culture, as there will be no growth from the specimen. You get your negative report and you have the quarantine removed. Later, very much to your surprise, there is another case of diphtheria within two weeks in the house and you wonder why this is. You did not do your duty as you should in taking that culture. The Laboratory gave you their findings but you had the condition of the patient to govern you also. Again many times you fail to take a culture from the nasal passages while the throat culture is negative and that patient becomes a menace to the public if allowed to go out.

I have had a little experience in my own family and in consequence thereof, I say that no diphtheria case should be released from quarantine until two consecutive negative cultures have been obtained at least two days apart. I have seen diphtheria germs persist in the throat of a child apparently well for two weeks. I kept sending cultures to the Laboratory and they kept reporting positive cultures and I kept fighting that nose and

Digitized by Google

throat vigorously. Perhaps I was over-zealous. If I had taken the first negative culture for a release, who knows but my child might have infected hundreds of others? For I would one day receive a negative culture and perhaps the next two would be positive, and so it ran on for a couple of weeks.

Our State Laboratory is overworked. Some times many of you may get impatient because you did not receive a report by the next mail. You must be kind and patient with the present staff of officials for they are doing all they can and more than they ought to as they have not the help at hand to turn off the work as fast as many of you expect it. I thoroughly believe we should have a building, and larger force of workers. Of course to do all this we must have a larger appropriation. These things can be brought about if you will place before your representatives the urgent need of better accommodations and for more men.

Our State Laboratory should stimulate an interest and desire in us to investigate things. If we will take a little time to check up some of our work we might be surprised and much benefited by the results. The Laboratory stands ever ready to assist in these original investigations, from which facts are obtained and knowledge gained that might prove of the greatest value to us all.

I had a very pleasant experience in finding out a fact that had been disputed by bacteriologists. It was very interesting to me and, I am sure, exceedingly valuable. I dare say that many of you might find the same thing. I have reference to the viability of the germ of diphtheria. We find that it has been stated by authorities on the bacteriology of diphtheria bacilli that these bacilli will not live in a dry state but a very short time. A few hours—five or six—of sunlight will destroy them. Let me give you my experience and finding in one such case. Early in March, 1906, from the 6th to 19th, there was a case of diphtheria in the family of Mr. B. They had during this illness a phonograph which was used to entertain the children. There were three or four cases in all. Early in the summer at one of our summer resorts on the Lake a family employed Mr. and Mrs. B. for general and household work. They did not live in the same cottage but in one near by. The young man and his sister, giving a house party, borrowed this phonograph. These two people only manipulated the machine. The young woman was just home from Smith College and the young man was attending this college. They had the instrument from the 30th of June to the 7th of July. The house party broke up on July 7th. When the house party broke up this instrument was returned to the owner. On the 14th day of July, I was called to examine the throat of the young woman and her brother. I found a suspicious throat. I believed it to be diphtheria. I made cultures and sent them to the Laboratory and used 4000 units of antitoxin. The report next morning showed that my suspicions were well founded for we had two cases of diphtheria. I was a little curious to know where it came from. I began an investigation.

Digitized by Google

There had been no diphtheria in either of the colleges attended by these two young people. The only cases were in the family from whom the instrument was borrowed. I looked into the question of the fumigation of the house in which the family lived. I believe the woman was honest; she said the house was not sealed during fumigation; the house was an old one with many openings. One candle was used with no moisture. The candle was put in the house at 9 o'clock and she was told that she could open the windows at 11 or 12 o'clock. She needed her shears which were in the room undergoing fumigation so she went in there for them. The phonograph was not opened nor the records exposed. Neither were their clothes disinfected. I concluded that that fumigation was not effective. I boiled a bottle and cork for 20 minutes and then corked the bottle. This bottle and cork were in a large quantity of water during sterilization. I then took a culture from the handle of the phonograph and about the instrument and another from the outside of the boxes and from the inside of the records. I found that the cultures made from the phonograph showed a positive growth, living, active bacteria, and what is more interesting is that they were of the same variety as those found in the throats of these two young people. I believe the germs were transferred from the records to the fingers in the handling and from the finger to the mouth in the act of moistening the finger to facilitate the more secure holding of the record. I do not know of any cases on record where the germs have lived in a dry state for at least four months. This has thoroughly convinced me that we should be careful to the extreme in matters of fumigation. Everything should be opened out and every care and precaution taken in this direction. I wish you would try this experiment, for if these germs will live four months, they might live six months. This might explain why certain epidemics of diphtheria are not better controlled. It certainly does demonstrate a careless or ineffective fumigation. When we investigate these things we will soon find out where the carelessness on our part affects our patients.

Mr. President, I want to thank you for the courtesy you have shown me by inviting me to discuss this paper. I want again to thank Dr. Stone for his valuable paper and also the gentlemen present for their courteous attention.

Discussion by Dr. Henry D. Holton, Brattleboro, Vermont.

There is one point which has been overlooked and which I am sure is a very important one. We have provided blanks or cards to accompany each and every specimen sent to the Laboratory of Hygiene for analysis. Suppose a physician in your town sends a specimen to the Laboratory without the name of the patient. In the course of a year or perhaps less he is anxious to know what the result of that examination was. He writes to the Laboratory for the result. He sent no mark of identification when he sent the specimen and now there is no means of telling just the information

Digitized by Google

he needs. We have a great many of these specimens sent in without the name of the patient, although the blank is filled out with a line for this information. I presume it is oftentimes an oversight on your part, but in order to get the most of the Laboratory observe every rule which has to do with the sending of specimens.

Closing Discussion by Dr. B. H. Stone, Burlington, Vermont.

I haven't anything further to say except that I would like to thank Mr. Fitts and Dr. Clark publicly and personally for their very handsome tributes. I am sure it is very gratifying to us. I would advise you to forget the paper and remember the discussions.

NUMBER OF EXAMINATIONS MADE AT THE LABORATORY OTHER THAN THOSE MADE UNDER THE PURE FOOD LAWS

TUBERCULOSIS

Positive	403
Negative	1156
Total	1559

TYPHOID

Positive	179
Negative	559
Total	738

DIPHTHERIA

Positive	765
Negative	1600
Total	2365

WATERS

GROUND

Polluted	362
Normal	147
Total	509

SURFACE

Polluted	67
Normal	140
Total	207

MALARIA

Positive	1
Negative	26
Total	27

MISCELLANEOUS

Positive	209
Negative	169
Total	378

LIQUORS

Conform to U. S. P. Standard	283
Do not conform to U. S. P. St'd	129
No standard—passed	114
No standard—rejected	3
Total	529

MEDICO-LEGAL

Total number of examinations	102

Digitized by Google

MILK ABOVE STANDARD EXAMINED FROM NOVEMBER 10, 1907, TO FEBRUARY 10, 1908.

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
52886	11-15-07	C. B. Simonds	Hartford	13.28	8.68	4.6	Normal	
52891	"	E. B. Newton	"	13.54	8.94	4.6	"	
52919	11-18-07	Norton & Wescott	Fair Haven	13.04	8.68	4.4	"	
52920	"	Peter Wood	"	14.27	9.27	5.0	"	
52923	"	I. A. Wood	"	13.08	8.53	4.5	"	
53004	11-20-07	Joseph St. Mary	Poultney	12.98	8.78	4.2	"	
53006	"	C. C. Loomis	"	16.95	10.95	8.0	"	Ash .72
53009	"	John Mullen	"	13.20	9.00	4.2	"	
53053	11-21-07	Homer Penamen	St. Johnsbury	13.64	8.84	4.8	"	
53054	"	H. M. Scott	"	13.25	8.55	4.7	"	
53058	"	Hastings White	"	.....	.....	11.4	"	Top milk
53059	"	Frank Hastings	"	13 88	8.88	5.0	"	
53060	"	Wm. Welch	"	12.75	8.55	4.2	"	
53062	"	Joseph Dresette	"	12.80	8.60	4.2	"	
53063	"	Christopher Jepson	Bennington	13.66	8.96	4.7	"	
53064	"	Philip Jacobs	"	13.16	8.76	4.4	"	
53065	"	Wm. J. Hicks	"	12.81	8.81	4.0	"	
53344	12- 4 07	J. N Warner	St. Albans	.....	.....	6.3	"	Top milk
53345	"	E. A. Brooks	"	13.40	8.70	4.7	"	
53346	"	Z. Campbell	"	12.70	9.00	3.7	"	
53347	"	W. S. Clark	"	13.28	8.78	4.5	"	
53348	"	F. O. Jackson	"	13.13	8.53	4.6	"	
53349	"	Norman Case	Woodstock	13.09	9.49	3.6	"	
53352	"	B. P. Peables	"	15.47	9.27	6.2	"	
53354	"	Carl Hartham	"	13 88	8.88	5.0	"	
53355	"	Rob't Peavey	Bradford	13.75	8.55	5.2	"	
53356	"	Perry Chase	"	14.64	9.54	5.1	"	
53357	"	Warren Morse	"	13.30	8.90	4.4	"	
53 8 8	"	B. S. Hooker	"	15.74	9.24	6.5	"	
53 59	"	Geo. B. Brown	"	12.45	8.75	3.7	"	
53361	"	W. D. Stevens	Bellows Falls	12.68	8.68	4.0	"	
53363	"	C. H. Spaulding	"	13.64	8.74	4.9	"	
53364	"	A. G. Rice	"	14.60	8.80	5.4	"	
53368	"	J. H. Wright	"	13.16	8.66	4.5	"	
53409	12- 6-07	Fairbanks & Co	St. Johnsbury	14.72	9.37	5.4	"	
53410	"	Charles Thayer	"	.....	.....	7.1	"	Top milk
53411	"	Geo. Stewart	"	14.26	9.06	5.2	"	
53412	"	Gilman Bros	"	13.16	8.66	4.5	"	
53414	"	J. K. Beck	"	12.85	9.45	3.4	"	
53415	"	F. H. Ranney	"	13.42	8.92	4.5	"	
53418	"	F. L. Osgood	Bellows Falls	.....	.....	6.5	"	Top milk
53420	"	W. B. Dow & Son	"	12.91	8.51	4.4	"	
53461	"	J. A. Peck	Middlebury	13.64	8.74	4.9	"	
53417	"	Albert Whitton	Bellows Falls	12.81	8.81	4.0	"	
53511	12-10-07	Mrs. F. X. Saltus	Burlington	13.18	8.88	4.3	"	
53512	"	F. L. Murray	"	11.98	8.53	3.4	"	
53517	"	J. Roland	"	13.67	9.17	4.5	"	
53519	"	J. B. Ritchie	"	13.05	8.95	4.1	"	
53520	"	H. A. Bixby & Co	"	12.93	8.83	4.1	"	
53522	"	E. J. Viens	"	13.17	8.97	4.2	"	
53523	"	Steele & Butler	"	12.93	8.83	4.1	"	
53524	"	H. B. Chittenden & Son	"	14.02	9.02	5.0	"	
53525	"	C. K. Tyler	"	12.81	8.81	4.0	"	
53527	"	H. H. Wheeler	"	12.81	8.81	4.0	"	
53528	"	T. P. Welch	"	13.54	9.04	4.5	"	
53529	"	Thos. Ryan	"	12.21	8.71	3.5	"	
53530	"	J. G. G. Downing	"	13.54	9.04	4.5	"	
53531	"	I. E. Chase (Team)	"	13.04	8.64	4.4	"	
53532	"	O. E. Barber	"	13.42	8.92	4.5	"	
53533	"	E. O. Reynolds	"	12.99	8.62	4.3	"	
54534	"	River View Farm	"	12.81	8.81	4.0	"	
53535	"	"	"	.....	.....	40.	"	Cream
53536	"	D. J. Millham & Son	"	12.44	8.54	3.9	"	
53538	"	C. C. Bliss	"	12.92	8.72	4.2	"	

Digitized by Google

MILK ABOVE STANDARD EXAMINED FROM NOVEMBER 10, 1907, TO FEBRUARY 10, 1908 (Continued)

Laboratory No	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
53539	12-10-07	J. E. Maynard.....	Burlington	13.64	8.74	4.9	Normal	
53540	"	I. H. Huck.....	"	13.04	8.64	4.4	"	
53541	"	L. E. Haynes & Son..	"	13.54	8.94	4.6	"	
53560	"	Riblies	Windsor	13.54	8.94	4.6	"	Submitted
53688	12-14-07	J. G. G. Downing.....	Burlington	12.81	8.81	4.0	"	
53694	12-17-07	Dennis Bourne.....	"	13.78	8.98	4.8	"	
53696	"	Wm. Suckstorff.....	"	13.08	9.08	4.0	"	
53697	"	"	"	13.42	8.92	4.5	"	
53872	"	Varney Bros.....	Bristol	12.69	8.79	3.9	"	
53711	12-19-07	Baker & Tupper	Burlington	13.28	8.68	4.6	"	Submitted
53719	"	John Grandy.....	Rutland	12.82	8.82	4.0	"	Bacteria 50000 perc.c.
53721	"	C. G. Marks.....	"	13.13	8.53	4.6	"	" 20000 "
53722	"	Ray F. Russell.....	"	13.40	8.70	4.7	"	" 5000 "
53723	"	Dunn Bros.....	"	12.56	8.56	4.0	"	" 5000 "
53724	"	Leigh Hunt.....	"	14.02	9.02	5.0	"	" 5000 "
53726	"	David Lillie.....	"	12.56	8.56	4.0	"	" 80000 "
53727	"	Temple Bros.....	"	13.40	8.80	4.6	"	" 40000 "
53731	"	G. A. Davis.....	"	12.44	8.54	3.9	"	" 16000 "
53732	"	C. P. Beebe.....	"	12.69	8.79	3.9	"	" 8000 "
53735	"	Mead Farm.....	"	12.82	8.62	3.7	"	" 40000 "
53736	"	T. J. Hart.....	"	13.05	8.85	4.2	"	" 37000 "
53739	"	A. L. Davis.....	"	13.64	8.84	4.8	"	" 15000 "
53735	"	T. A Quigley	"	13.64	8.74	4.9	"	" 90000 "
53728	"	H. C. Perkins.....	"	.....	.....	8.7	"	" 70 00 " Top milk
53739	"	A. Premo.....	"	13.16	8.66	4.5	"	Bacteria 90000 perc.c.
53740	"	R. J Bruce.....	Proctor	12.56	8.56	4.0	"	
53744	"	B. Hier.....	"	13.78	8.98	4.8	"	
53746	"	E. Myatt.....	"	12.44	8.54	3.9	"	
53770	"	J. L. Johnson.....	Springfield	14.02	9.02	5.0	"	
53810	"	A. E. Lamson	Burlington	12.92	8.62	4.3	"	Submitted
53811	"	"	"	13.04	8.64	4.4	"	
53958	12-31-07	Ernest H. West.....	Dorset	13.28	8 68	4.6	"	
54016	1- 3-08	H. E. Richardson	Saxtons River	13.28	8.68	4.6	"	
54017	"	Morrison Farm.....	Barre	12.81	8.81	4.0	"	
54018	"	F. C. Little.....	"	12.33	8.73	3.6	"	
54019	"	J. Wildgoose.....	"	14.76	9.56	5.2	"	
54023	"	Fred Bellville.....	"	13.40	8.70	4.7	"	
54024	"	Homer D. Camp.....	"	.....	.....	6.8	"	Top milk
54025	"	L. B. Dodge.....	"	13.67	9.17	4.5	"	
54026	"	F. B. Martin.....	"	14.38	9.18	5.2	"	
54027	"	Geo. H. Adams	"	14.37	8.87	5.5	"	
54028	"	Mrs. G. W. Lawson ...	"	14.02	9.02	5.0	"	
54071	1- 6-08	Z. Campbell.....	St. Albans	14.15	9.25	4.9	"	
54072	"	J.N. Warner.....	"	12.57	8.77	3.8	"	
54073	"	F. O. Jackson.....	"	14.08	9.28	4.8	"	
54074	"	Walter Clark.....	"	12.21	8.71	3.5	"	
54075	"	E. W Brooks.....	"	12.93	8.83	4.1	"	
54136	1- 8-08	E. Slayton.....	Barre	14.98	8.98	6.0	"	
54138	"	Geo. Willard.....	"	14.02	9.02	5.0	"	
54139	"	T. T. Martin.....	"	13.66	8.96	4.7	"	
54140	"	C. Bixby.....	"	13.63	8.53	5.1	"	
54141	"	W. Dix	"	14.72	8.72	6.0	"	
54142	"	F. Lafayette.....	"	13.66	8.96	4.7	"	
54143	"	E. K. Hutchinson.....	"	13.90	9.00	4.9	"	
54145	"	H. H. Pratt.....	"	13.08	8.78	4.3	"	
54146	"	C. Newhall..... ...	"	13.40	8.60	4.8	"	
54179	1-10-08	J. A. Hoadley	Brattleboro	13.62	8.80	4.8	"	
54180	"	"	"	.....	.....	34.	"	Cream
54373	1-15-08	J. B. Turner.....	Proctor	12.57	8.77	3.8	"	
54374	"	C. Dodge.....	"	12.81	8.81	4.0	"	
54509	1-20-08	W. B. Place.....	Essex Junction	12.80	8.50	4.3	"	
54510	"	J. H. Douglass.....	"	13.06	8.76	4.3	"	
54562	1-22-08	H. B. Chittenden & Son	Burlington	13.53	8.82	4.7	"	

Digitized by Google

MILK ABOVE STANDARD EXAMINED FROM NOVEMBER 10, 1907, TO FEBRUARY 10, 1908 (Continued)

Laboratory	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
54563	1-22 08	H. A. Bixby & Co.	Burlington	12.68	8.68	4.0	Normal	
54564	"	E. O Reynolds.....	"	12.44	8.64	3.8	"	
54565	"	Dennis Bourne.....	"	14.02	9.02	5.0	"	
54566	"	C. C. Bliss.....	"	12.40	8.80	4.6	"	
54567	"	Baker & Tupper.....	"	13.16	8.66	4.5	"	
54568	"	Wm. McGrath.....	"	12.60	9.20	3.4	"	
54569	"	I. H. Buck.....	"	13.66	8.96	4.7	"	
54570	"	H. H. Wheeler	"	13.04	8.74	4.3	"	
54571	"	L. E Haynes.....	"	13 55	9.15	4.4	"	
54572	"	O. E Barber	"	13 2[illegible]	8.57	4.[illegible]	"	
54573	"	River View Farm.....	"	13.55	9.15	4.4	"	
54574	"	D. J. Millham & Son..	"	13.17	8.97	4.2	"	
54575	"	E. J. Viens.....	"	13.04	8.64	4.4	"	
54577	"	J. E. Maynard.....	"	12.57	8 77	3.8	"	
54578	"	F. X Bordo.....	"	13.32	9.32	4.0	"	
54579	"	I. E. Chase	"	13.15	8.55	4.6	"	
54580	"	Steele & Butler.....	"	12.81	8.81	4.0	"	
54581	"	T. P. Welch.....	"	13.15	8.95	4.2	"	
54582	"	Thos. Ryan	"	12.21	8.71	3.5	"	
54583	"	Mrs F. X. Saltus.....	"	13.27	8.57	4.7	"	
54585	"	J. G. H. Downing.....	"	13.01	9.06	4.0	"	
54584	"	J. B. Ritchie.....	"	12.81	8.81	4.0	"	
54601	"	Wm Suckstorff.....	"	13.66	8.96	4.7	"	
54602	"	C. K. Tyler.....	"	12.44	8.54	3.9	"	
54674	1-25 08	Wm. Suckstorff.....	"	13 04	8.64	4.4	"	Submitted
54676	"	"	"	13 05	8.85	4.2	"	"
54677	"	"	"	13.88	8.88	5.0	"	"

Total, 154.

Digitized by Google

MILK BELOW STANDARD EXAMINED FROM NOV. 10, 1907, TO FEBRUARY 10, 1908

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
52885	11-15-07	E. A. O'Neil	Hartford	12.17	7.87	4.3	Normal	Low in solids not fat
52887	"	R. H. Simonds	"	12.80	8.60	4.2	"	Dirty
52888	"	P. J. O'Connor	"	14.15	9.25	4.9	"	"
52889	"	David Mossey	"	13.76	8.76	5.0	"	"
52890	"	Wilder Pierce	"	13.43	9.13	4.3	"	"
52924	11-18-07	Henry Streeter	Fair Haven	14.50	9.10	5.4	"	"
52921	"	Fred Reynolds	"	13.35	9.05	4.3	"	Dirty; low in solids not fat
52922	"	Lewis D. Allen	"	13.28	8.68	4.6	"	Dirty
52936	"	———	St. Albans	12.69	8.79	3.9	"	Dirty. Submitted by Dr. Albee A. Skeels
53003	11-20-07	Fred Hawes	Poultney	.....	.....	9.4	"	Dirty; top milk
53006	"	H. Ballard	"	14.14	9.04	5.1	"	"
53007	"	C. C. Graves	"	14.48	8.78	5.7	"	Very Dirty
53008	"	Frank Briggs	"	14.17	9.17	5.0	"	Dirty
53010	"	R. R. Thrawl	"	13.60	8.70	4.9	"	"
53052	"	Charles Weeks	St. Johnsbury	11.36	8.36	3.0	"	Dirty; low in solids not fat, and fat
53055	"	W. H. Wright	"	12.67	8.37	4.3	"	Dirty; low in solids not fat
53056	"	T. J. Morier	"	10.78	8.78	2.0	"	Dirty; low in total solids and fat
53057	"	Roy Taft	"	.....	.....	6.8	"	Dirty; top milk
53061	"	W. L. Knowlton	"	13.18	8.88	4.3	"	Dirty
53350	12-4-07	Geo. Harthorn	Woodstock	8.91	9.11	4.7	"	"
53351	"	C. J. Gould	"	14.00	8.60	5.4	"	"
53360	"	J. S. Barrows	Bradford	14.26	9.16	5.1	"	"
53362	"	S. W. Kendall	Bellows Falls	14.15	9.95	4.8	"	"
53366	"	A. L. Young	"	11.73	8.83	3.1	"	Dirty; low in fat
53365	"	C. E. Allen	"	12.19	8.29	3.9	"	Dirty; low in solids not fat
53367	"	H. S. Wright	"	13.63	8.63	5.0	"	Dirty
53353	"	A. H. Wallace	Woodstock	.....	.....	13.0	"	Dirty; top milk
53413	12-6-07	W. H. Worthem.	St. Johnsbury	13.16	8.76	4.4	"	Dirty
53416	"	M. F. Sampson	"	13.05	8.75	4.3	"	"
53419	"	Dennis Drislane	Bellows Falls	11.82	8.12	3.7	"	Dirty; low in solids not fat
53422	"	C. B Humes	"	13.28	8.78	4.5	"	Dirty
53513	12-10-07	M. D. Perelman	Burlington	13.18	9.08	4.1	"	"
53514	"	Wm. Suckstorff	"	13.30	8.90	4.4	"	"
53515	"	W. M. McGrath	"	12.37	9.57	2.8	"	Low in fat
53516	"	O. Mungeon & Son	"	12.14	8.04	4.1	"	Low in solids not fat
53518	"	D. Bourne	"	12.81	8.81	4.0	"	Dirty
53521	"	I. E. Chase (Creamery)	"	13.18	8.88	4.3	"	"
53526	"	F. X. Bordo	"	11.10	8.10	3.0	"	Low in solids not fat and fat
53421	12-6-07	Irving Westney	Bellows Falls	11.92	7.72	4.2	"	Low in solids not fat; dirty; watered
53607	12-13-07	"	"	16.00	9.60	5.4	"	Dirty
53720	12-19-07	A. A. Plumley	Rutland	12.32	8.52	3.8	"	"
53730	"	H. J. Novak	"	12.80	8.70	4.1	"	"
53733	"	J. C. McGoldrich	"	13.54	8.94	4.6	"	"
53734	"	R. H. Fintell	"	13.05	8.85	4.2	"	"
53737	"	C. S. Dye	"	12.80	8.60	4.2	"	"
53738	"	Chas. Phillips	"	14.07	8.67	5.4	"	"
53741	"	S. R. Adams	Proctor	13.52	8.82	4.7	"	"
53742	"	J. A. Blanchard	"	12.99	8.59	4.4	"	"
53743	"	N. B. Ladabouche	"	12.81	8.81	4.0	"	"
53745	"	R. C. Mead Estate	"	13.05	8.85	4.2	"	"
53747	"	F. C. Russell	"	12.56	8.56	4.0	"	"
54020	1-3-08	E. E. Perry	Barre	13.04	8.74	4.3	"	"
54021	"	Newhall	"	14.15	9.25	4.9	"	"
54022	"	C. W. Persons	"	13.16	8.76	4.4	"	"
54137	1-8-08	W. Jackson	"	14.75	9.15	5.6	"	"

Digitized by Google

MILK BELOW STANDARD EXAMINED FROM NOVEMBER 10, 1907, TO FEBRUARY 10, 1908 (Continued)

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
51144	1- 8-08	Geo. Perrin.....	Barre	14.50	9.10	5.4	Normal	Dirty
51147	"	Elmer Bancroft	"	13.54	8.94	4.6	"	"
54372	1-15-08	W. Fox	Proctor	13.52	8.72	4.8	"	Very dirty
54375	"	W. Humphery.....	"	13.42	8.92	4.5	"	Dirty
54376	"	Ed. Ladabouche....	"	12.80	8.60	4.2	"	"
54377	"	N. B. Ladabouche..	"	12 57	8.77	3.8	"	"
54378	"	T V. Bates.....	"	13.92	8.72	5.2	"	"
54379	"	R. F. Barton.....	"	12.80	8.60	4.2	"	Very dirty
54508	1-20-08	H. B. Teachout.....	Essex Junct.	13.66	8.96	4.7	"	Dirty
51576	1-22-08	M. D. Perelman	Burlington	12.52	8.62	3.9	"	"
54675	1-25-08	Wm. Suckstorff....	"	12.44	8.54	3.9	"	Odor of barn. Submitted
*51656	1-24-08	S. G. Salls	"	11.30	7.80	3.5	"	Watered
54975	2- 5-08	C. F. Spafford	Winooski	12.81	8.81	4.0	"	Dirty Submitted

Total, 68.

*Prosecuted.

Digitized by Google

FOODS

The following articles have been analyzed with reference to their compliance with the "Vermont Pure Food and Drug Law" and the results are shown in this table. This is the official list and should be taken by dealers as a warning against handling such articles as are illegal.

Article	Manufacturer or Wholesaler	(Vermont Pure Food and Drug Law) Number of Specimens		Remarks
		Legal	Illegal	
Waldorf Catsup	Williams Bros., Detroit	1		
Ketchup	Cruikshanks, Pittsburg, Pa.	1		
Catsup	Heinz, Pittsburg, Pa.	1		
Cherries in Maraschino	R. C. Williams & Co., New York	1		
" "	Mihalovitch-Fletcher Co., Cincinnati, O.	1		
Cherries, White	Curtice Bros., Rochester, N. Y.	1		
Orangeate	Bishop & Co., Los Angeles, Cal	1		
Cranberry Sauce	Beechnut Packing Co. Canajoharie, N.Y.	1		
Raspberry Jelly	Ayer Preserving Co., Ayer, Mass.		1	Misbranded
Strawberry Jam	Curtice Bros., Rochester, N. Y.	1		
Deviled Meats	Armour & Co., Chicago	1		
Veribest Beef	" "	1		
Vienna Sausage	" "		1	Preserved with Boric acid
Vanilla Flavoring	M. C. McAndrews, Inc., Portland, Me.	1		
Extract Vanilla	C. H. Eddy & Co., Brattleboro, Vt.		1	Misbranded
" "	Baker Extract Co., Springfield, Mass.	1		
" "	G. W. Bangs, Lisbon, N. H.	1		
" "	G. H. Ring, Bristol, Vt.	1		
" "	Schotterback & Foss, Portland, Me.	1		
" "	Hathaway & Child, Boston		1	Contains coumarin
" "	Burlington Chemical Co., Burlington, Vt.	1		
" "	F. L. Brown & Co.		1	Contains coumarin
Extract of Lemon	M. C. McAndrews, Inc., Portland, Me.	1		
" "	C. H. Eddy & Co., Brattleboro, Vt.	1		
" "	Baker Extract Co., Springfield, Mass.		1	Low in oil of lemon
" "	E Hartshorn, Boston		1	Artifically colored
" "	G. W. Bangs, Lisbon, N. H.	1		
" "	G. H. Ring, Bristol, Vt.	1		
" "	F. L. Brown & Co.	1		
Extract of Peppermint	M. C. McAndrews, Inc., Portland, Me.		1	Low in oil of p'pp'rm't
Essence of Peppermint	C. H. Eddy & Co., Brattleboro, Vt.		1	"
Essence of Sweet Birch	" "		1	Misbranded
Vinegar	J. F. Lamson, Randolph, Vt.	1		
"	St. Johnsbury Grocery Co., St. Johnsbury, Vt.	1		
Cream Tartar	E. I. Claflin, Braintree, Vt.	1		
" "	Stickney & Poor, Boston	1		
" "	Berry, Dodge & Co., Newburyport, Mass.	1		
Purity Baking Powder	Purity Chemical Co., Boston	1		
Faultless Baki'g Powder	" "	1		
Sweet Chocolate	Crave & Martin, New York	1		
Maple Syrup	L. B. Dodge, Barre, Vt.	1		
" "	Thos. A. Waterman, Johnson, Vt.	1		
" "	Vermont Farmers Co., Springfield, Mass.		1	Adulterated
Casoid Biscuit No. 1	Thos. Leeming Co., New York	1		
" " No. 2	" "	1		
" " No. 3	" "	1		
Ground Sage	Berry, Dodge & Co., Newburyport, Mass.	1		
Non-alcoholic Beverages	J. A. Merrill, Burlington		18	Misbranded
" "	S. Cannon Co., Burlington, Vt.		12	"
" "	Rosenthal Bros., Burlington, Vt.	1	5	"
" "	Price & Whitney, Burlington, Vt.	2	9	"
" "	C. H. Eddy & Co., Brattleboro, Vt.	2		
Ora-ade, U. S. Club	Puritan Carbonating Co., Millis, Mass.		1	Preserved
Clicquot Club Ginger Ale	Clicquot Club Co., Millis, Mass.	1		
	Total	42	51	

Digitized by Google

DRUGS

The following drugs have been analyzed with reference to their compliance with the "Vermont Pure Food and Drug Law" and the results should be taken by dealers as a warning against handling such articles as are illegal.

Article	Manufacturer or Wholesaler	Number of Specimens (Vermont Pure Food and Drug Law)		Remarks
		Legal	Illegal	
Acetanilid Compound	Daggett & Miller, Providence, R. I.	1		
"	Mulford, Philadelphia		1	Contains 2.6 grs. acetanilid
Migraine	Noyes, Lancaster, N. H.		1	" 2.4 " "
Phenyo Caffeine	Phenyo Caffeine Co., Worcester, Mass.		1	Misbranded
Eureka Headache Powders	Headache Powder Co., Concord. N. H.	1		
Orangine Powders	Orangine Chemical Co., Chicago	1		
Dr. Kohler's Antidote for Headache	Kohler Manufacturing Co., Baltimore, Md.	1		
Cephalgine Tablets	Cephalgine Co., Spencer, Mass.	1		
Rexall Headache Pills	United Drug Co., Boston, Mass.		1	Misbranded. Contains acetanilid
Rexall Headache Powders	" "		1	" "
Rexall Neuralgia Powders	" "	1		
O. C. U. Headache Powders	W. V. Orcutt, St. Johnsbury, Vt.		1	Misbranded. Contains acetanilid
Wilson's Headache Powders	Wilson's Pharmacy, Berlin, N. H.		1	" "
Headache Powders	Eugene Gosselin & Bro., Burlington, Vt.		1	" "
Stearn's Headache Powders	R. B. Stearns & Co,. Burlington, Vt.	1		
Stearn's Headache Wafers	" "	1		
Dr. King's New Discovery	H. E. Bucklin & Co., Chicago		1	Misbranded. Cont's chloroform and alcohol
Perry Davis Pain Killer	Davis & Lawrence Co., New York		1	" " opium and alcohol
Dr. Ingham's Pain Extractor	Dr H. A. Ingham, Vergennes, Vt.		1	" " " "
One Minute Cough Cure	E. C. DeWitt & Co., Chicago		1	" " chloroform and alcohol
Blackberry Balsam	Kimball Bros. & Co., Enosburg Falls, Vt.		1	" " opium and alcohol
5 Drops Rheumatic Cure	Swanson Rheumatic Cure Co., Chicago	1		
Rexall Catarrh Tablets	United Drug Co., Boston	1		
Rexall Diarrhoea Compound	" "		1	Misbranded
Rexall Quick Relief	" "		1	"
Rexall Mucutone	" "		1	"
Rexall Hair Tonic	" "	1		
Newbros Herpicide	The Herpicide Drug Co., Detroit, Mich.	1		
Ring's Nox-Um-All Cough Cure	G. H. Ring, Bristol, Vt.		1	Misbranded. Low in opium and alcohol
Ring's Nox-Um-All Pain Killer	" "		1	" " " " " "
Ring's Vegetable Ready Relief	" "		1	" " " " " "
Ring's Extract Jamaica Ginger	" "		1	" Alcohol not stated

Digitized by Google

DRUGS (Continued)

Article	Manufacturer or Wholesaler	Number of Specimens (Vermont Pure Food and Drug Law)		Remarks
		Legal	Illegal	
Ring's Peerless Kidney Remedy	G. H. Ring, Bristol, Vt.		1	Misbranded. No opium Alcohol high
Ring's Cholera Specific	" "		1	" Low in opium and alcohol
Pure Essence of Wintergreen	" "		1	" Alcohol not stated
Pure Essence of Peppermint	" "		1	Low in Peppermint oil. Alcohol not stated
Jamacia Ginger Compound	Kimball Bros. Enosburg Falls, Vt.	1		
Robinson's Cacterine	Cacterine Medicine Co., New York		1	Misbranded
Spirit of Nitrous Ether	C. H. Eddy & Co., Brattleboro, Vt.		1	Below U. S. P. Standard
Powdered Ipecac	Eastern Drug Co., Boston	1		
Hydrotonic	Dr. H. Sanche & Co , Montreal, Canada		1	Misbranded
Hager's Sovereign Oak Balsam	Hager Medicine Co., South Bend, Ind.		1	"
Hager's Blood and Nerve Restorative	" "	1		
Hager's Cascara Constipation Cure	" "		1	Misbranded
Woodford Whiskey	F. P. Whitney, Middlesex, Vt.	1		
Dr. Paxton's Malt Extract	Dr. Paxton Medical Co., Troy, N. Y.		9	Alcohol not stated. 4.56-5.63 per cent by vol.
Victor Malt Extract	Quandt Brewing Co., Troy, N. Y.		4	" " " 4.27-4.56 " " " "
King's Puremalt	Puremalt Department, Boston	6	1	
O. H. Malt Extract	Otto Huber, Borough of Brooklyn, N. Y.	3		
Pabst Malt Extract of Malt and Hops	Pabst Brewing Co., Milwaukee, Wis.	2		
Malt Extract	W. J. Henderson & Co., Burlington, Vt.		1	Alcohol not stated. 4.05 per cent by volume
"	F. Henry Parker, Burlington, Vt.		1	" " " 4.85 " " " "
Johann Hoff's Malt Extract	Eisner & Mendelson Co., New York		11	" " " 4.27-6.55 per cent by vol.
Malt Nutrine	Anheuser-Busch Brewing Co., St. Louis		6	" " " 1.06-2.12 " " " "
Nutrient Tonic Comp'd of Malt and Hops	Long Island Bottling Co., Boston	1	1	" " " 5.24-5.39 " " " "
Wampole's Extract of Malt	Henry K. Wampole & Co., Philadelphia		1	" " " 8.72 " " " "
Wyeth's Liquid Extract of Malt	John Wyeth & Bros., Philadelphia	1		
Canada Malt Extract	Paragon Malt Extract Co., New York	1		
Leopold Hoff's Malt Extract	Tarrant & Co., New York		3	Alcohol not stated. 5.63-7.32 per cent by vol.
P. & A. Liniment	The P. & A. Remedy Co., Rutland		1	Misbranded. Alcohol not stated
P. & A. Compound Syrup of Spruce Gum	" "		1	" " " "
Uric O	The Smith Drug Co.		1	Misbranded
Cooper's Quick Relief	Cooper Medicine Co., Dayton, O.	1		
Koda Blood Purifier	F. L. Brown & Co.	1		
Leibig's Beef, Iron and Wine	The Jarmuth Co., Providence, R. I.		1	Misbranded
Lime Water	Trudel Drug Co., Rutland, Vt.		1	1.05 per cent U. S. P. strength
"	A. H. Abraham, Rutland, Vt.		1	3.4 " " " "
"	T. M. Barrett, Rutland, Vt.		1	90. " " " "

Digitized by Google

Drugs (Continued)

Article	Manufacturer or Wholesaler	Number of Specimens (Vermont Pure Food and Drug Law)		Remarks
		Legal	Illegal	
Lime Water	L. A. Miner, Rutland, Vt.	1		100.0 per cent U. S. P. Strength
Alcohol	A. H. Abraham, Rutland. Vt.	1		
"	Trudel Drug Co., Rutland, Vt.		1	84.6 per cent
Spirit Camphor	T. M. Barrett, Rutland. Vt.		1	Below U.S P. Standard in camphor and alcohol
"	Chas. W. Ward. Rutland. Vt.		1	" " " " " " "
"	A. H. Abraham, Rutland, Vt.		1	" " " " " " "
"	Green Bros., Fair Haven, Vt.		1	" " " " " " "
"	L. A. Miner, Rutland, Vt.	1		
"	Higgins Drug Co., Rutland, Vt.	1		
Olive Oil	McCallin & Farmer, Rutland, Vt.	1		
Comp'd Lotion Orange and Hamamelis	B. M. Flint, Fairlee. Vt.		1	Misbranded
Formalin	Merck & Co., New York	1		
Tincture Iodine	V. A. Grant. Randolph, Vt.	1		
Fowler's Solution	Eastern Drug Co., Boston	1		
"	O. A. Gast, Bellows Falls, Vt		1	Below U. S. P. Standard
"	A. H. Fuller, Bellows Falls, Vt		1	" " "
Tincture Opium	John Wyeth & Bro., Philadelphia	1		
"	G. E. Green & Co., Brattleboro, Vt.	1		
"	W. H. Zottman & Co., Burlington. Vt	1		
Tincture Aconite	G. E. Green & Co., Brattleboro, Vt.	1		
"	F. H. Holden & Co., Brattleboro, Vt.		1	Below U. S. P. Standard
Tincture Belladonna	G. E. Green & Co., Brattleboro, Vt.	1		
"	F. H. Holden & Co., Brattleboro, Vt.	1		
Tincture Iodine	A. H. Abraham, Rutland, Vt.		1	7.13 grams in 100 c. c.
"	Green Bros., Fair Haven, Vt		1	5.14 "
"	T. M. Barrett, Rutland, Vt.		1	4.10 " — U. S. P. Standard
"	L. A. Miner. Rutland, Vt.	1		6.86 " — 6.86 grams in 100 c. c.
"	Pratt & Levins, Rutland, Vt.		1	5.96 "
"	Higgins Drug Co., Rutland. Vt.	1		6.86 "
"	Trudel Drug Co., Rutland, Vt.		1	4.88 "
	Total	48	88	

Digitized by Google

MISCELLANEOUS MEATS

Laboratory No.	Material	Submitted by	Remarks
54759	Pork (3 specimens)	Dr. A. N. Norton, Bristol	Trichinae present
55130	"	Will Chase, Bristol	Normal
54955	"	J. McGee, Bristol	"
54954	"	John Case, Bristol	"
54953	"	R. S. Smith, Bristol	"
54952	"	Harlow, Bristol	"
54951	"	Myra Wilson, Bristol	"
54981	"	Orvis, Bristol	"
54940	"	Labombard, Bristol	"
54979	"	W. C. Bingham, Bristol	"
54978	"	Frank Mott, Bristol	"
54834	" (2 specimens)	G W. Farr, Bristol	"
54831	" (4 specimens)	Lewis Hulburt, Bristol	"
54821	"	O. L. Bicknell, Bristol	"
54793	"	D Bosworth, Bristol	"
54055	"	F. H. Palmer, Bristol	"
55037	"	N. H. Peninton, Bristol	"
55036	" (3 specimens)	I. G. Shepard, Bristol	"
55131	" (2 specimens)	John S. Burt, Bristol	"
55075	"	Geo. Burritt, Bristol	"
55076	"	A. W. McShane, Bristol	"
55163	"	Dr. H. L Williamson, Bristol	"
55164	"	E. C. Norton, Bristol	"
55148	Internal organs of Sheep	E. H. Scott, Johnson	Lesions resembling milary tuberculosis. Also strongylus micrurus present
53571	Blood Pudding	Frank Miller, Burlington	No tubercle bacilli found
53508	Beef	Mrs. E. G Andrews, Burlington	Normal
53833	Pork (2 Specimens)	F. H. Palmer, Bristol	"
54098	Turkey	Harry Parot, So. Hero	"
54249	Beef Liver	Dr. W. N. Bryant, Ludlow	Numerous abscess
54151	Pork	Dr. C. F. Ball, Rutland	" "

Total, 39.

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

Volume VIII. No. 3.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

Thirty-one town clerks have failed to comply with the law in making returns of vital statistics. Their attention is called to No. 190, Acts of 1906.

A town in New York State is demanding damages from a family that suffered a child having whooping cough to be on the streets on the Fourth of July.

A paper published in Harrisburg, Pa., has the following item:—

"The startling mortality among children from the little-regarded ailment of measles was indicated at Harrisburg, Penn., Jan. 18, by a statement issued by the State Department of Health, showing that in 1906 there were 1,463 deaths from it, 1,240 being of children under 5 years of age.

"In December alone 2,307 cases of the disease were reported and a search of the records shows that it kills 2½ times more children than does scarlet fever."

"Every case of what is called 'children's diseases,' is required to be reported, under penalty, and if people were as much afraid of measles, whooping cough, mumps, chicken-pox, etc., as they are of smallpox and the more virulent ills and took the same precautions, these diseases would cease to exist."

Digitized by Google

INTERPRETATION OF BACTERIOLOGICAL EXAMINATIONS.

We desire to impress upon the mind of every physician in the state that a bacteriological examination made at the State Laboratory of Hygiene is solely to *assist* the physician in arriving at a correct diagnosis, and that the report which the laboratory makes, whether "positive" or "negative," is *upon the material sent.* As an illustration: A swab from a suspected case of diphtheria may be reported "negative," solely because no live diphtheria germs were entrapped when the swab was used; yet the disease may have been diphtheria. The report is made *upon the swab,* and not upon the patient. The same application of principle holds in the examination of suspected tuberculosis.

If a culture taken from the throat of a patient, who appears, clinically, to have diphtheria, reveals the Klebs-Loeffler bacillus, there can be no question as to the diagnosis; but should the culture prove negative, instead of positive, the physician should in every instance regard the result as valueless, and should not permit it to warp his judgment or treatment of the case from a clinical point of view. The physician who relies upon a primary negative result for a diagnosis of his case may find hmself in serious trouble, with, perhaps, a most malignant type of diphtheria on his hands a few days later.

The Laboratory does not in any instance give a diagnosis of the case; does not see the patient; knows nothing of his symptoms. It simply reports "positive" or "negative" as the result of a most careful and scientific examination of the *material received.* It remains for the physician to make the diagnosis after assembling all the facts presented and obtainable.

Park, who may be regarded as an eminent authority, says:

> Diphtheria does not occur without the presence of the dipthheria bacilli; but there have been many cases of diphtheria in which, for one or another reason, no bacilli were found in the cultures by the examiner. In many of these cases later cultures revealed them.
>
> In a convalscent case the absence of bacilli in any one culture indicates that there are certainly not many bacilli left in the throat. Only repeated cultures can prove their total absence.

These remarks are made because in laboratory work there is occasionally a physician who relies upon a single negative result, and the same is true of health officers in determining when a patient may be released from quarantine. In neither case is a single negative result conclusive.

The attention of physicians and health officers is called to the above from the bulletin of the New Hampshire State Board of Health.

Do not ever release a case of diphtheria from quarantine until you have two negative cultures taken two days apart.

Digitized by Google

Digitized by Google

Digitized by Google

614.0979
V2 B.
UNIV. OF MICH.
JUN 6 1908

Bulletin No. 4, Volume VIII.

Issued Quarterly by

Vermont State Board of Health,

June 1, 1908.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS:

A Fallacy in the Ferric-Chloride Test for Salicylic Acid in Malt Liquors, by C. P. Moat, Sanitary Chemist. Page 2.

Preventing the Spread of Infectious Diseases, by Thomas Darlington, M. D., Commissioner of Health, New York City. Page 3.

Pure Foods, by C. P. Moat, Sanitary Chemist, Vermont State Board of Health. Page 12.

Food and Drug Inspection, by L. P. Sprague, M. D. Page 23.

Report of Examinations at the State Laboratory. Page 27.

News Items. Page 42.

Tenth Annual School of Instruction for Health Officers. Page 46.

BRATTLEBORO, VT.

1908

Digitized by Google

A FALLACY IN THE FERRIC-CHLORIDE TEST FOR SALICYLIC ACID IN MALT LIQUORS.

By C. P. Moat, Sanitary Chemist.

A few months ago in examining a number of different brands of malt extracts, we found that Malt Nutrine, manufactured by the Anheuser-Busch Brewing Association, gave a test for salicylic acid. The firm took exception to our report and called our attention to the fact, then unknown to us, that the caramel malt used in the manufacture of Malt Nutrine contains a substance called "Maltol" which gives a violet color with ferric-chloride. This proved to be so. The two may be distinguished by Milloh's reagent, which gives no color with "Maltol" but gives a reddish color with salicylic acid.

In looking up the literature available very little has been found regarding this substance.

Allen's Commercial Organic Analysis mentions it as follows:—"According to R. J. L. Shoepp (abst. J. C. S. 1896, ii. 227), the ferric-chloride reaction is yielded by some specimens of beer undoubtedly free from salicylic acid, owing to the presence of maltol, a body isolated by Brand from roasted malt. This substance, however, does not yield any characteristic reaction with Millon's reagent with which salicylic acid gives a dark red coloration."

Mulliken's "Identification of Pure Organic Compounds" classes "Maltol" $C_6H_4(OH_2)$ under Phenolic Compounds—colorless and solid.

The Anheuser-Busch Brewing Association sent us the following references, which are not available to us at present: "Laboratorium des Brauers," by W. Windisch, p. 336; "Handbuch fur den Amerikanischen Brauer and Malzer," by Hantke, 1st ed. p. 314.

Further inquiry brings out the fact that very little is known of "Maltol," but caramelized malt does contain this substance, which gives the phenolic reaction with ferric-chloride. It is supposed to be a cyclic compound due to the disintegration of some polysaccharide, in which the open chain is condensed to a ring derivative.

We have obtained several samples of caramel malt through the kindness of the Anheuser-Busch Brewing Association, the Frank Jones Brewing Company, and of George Defren, Esq., of Brookline, Mass., and find that all of the samples give the violet color with ferric-chloride after digesting with water at 65 degrees C., filtering and extracting with chloroform. Ordinary malt does not give the test but we have caramelized some of this same malt in this laboratory and obtained the test. Not knowing the solubility of "Maltol" we have also made the test for salicylic acid by means of ether extraction and extraction by ether and benzine mixture and find the same color is obtained with the ferric-chloride test.

We have not had the time to go into this matter further, but give this information to assist any others who, like ourselves, are unaware of the existence of "Maltol" in malt liquors.

Digitized by Google

PREVENTING THE SPREAD OF INFECTIOUS DISEASES.

By Thomas Darlington, M. D., Commissioner of Health, New York City.

The department of health of the city of New York is endowed by law, through the provisions of the city charter, with practically unlimited power indealing with all matters affecting directly or indirectly, the health and lives of the inhabitants of the city.

The board of health, which is the governing power of the department of health, issues its rules and regulations in the form of a sanitary code, and this code and its sections have the force of law. Any violation of the sections is a misdemeanor and is punishable as such.

While the powers of the board of health are far-reaching, and often drastic, its functions are purely beneficent and its purpose broadly humanitarian.

In dealing with questions of public health, the control of epidemics assumes a position of importance. It has been our endeavor in New York to so systematically and thoroughly observe and control each individual case of infectious disease and to use such methods in the prevention of the spread of contagion, that epidemics may be relegated to a theoretical status.

"A chain is no stronger than its weakest link" and the department of health of New York City has endeavored to weld each link so firmly and thoroughly that the chain of control of infectious diseases is a cordon of strength and protection.

Our chain may seem intricate, but following, as it does, each case from its incipiency to its termination it forms a well rounded and effective whole.

Section 133 of the sanitary code of New York provides that "It shall be the duty of every physician to report to the department of health, in writing, the full name, age and address of every person suffering from any one of the infectious diseases included in the list appended, with the name of the disease, within twenty-four hours of the time when the case is first seen." Then follows a list of infectious diseases divided into three classes, *First,* the contagious or very readily communicable; *Second,* communicable, and *Third,* indirectly communicable, through an intermediary host.

In this provisional classification of the infectious diseases, arranged for practical purposes, the most readily communicable of these diseases, embracing the exanthemata and typhus fever, have been placed in a group by themselves and called contagious. This has been done with a view to emphasizing a distinction, which is not only of scientific significance but of practical importance, in dealing with the sanitary features of administration. This distinction is furthermore of importance because it avoids the misunderstanding and alarm frequently caused by including in the same class the very readily communicable diseases (such as small pox) and the

Digitized by Google

much less communicable diseases (such as tuberculosis), which require very different sanitary methods for their control.

With slight modifications, this classification has been followed in dividing the infectious diseases into classes, "Contagious" and "Communicable," and establishing two separate divisions in the department of health for their control.

The division of contagious diseases cares for measles, rubella, scarlet fever, smallpox, varicella, typhus fever, diphtheria, Asiatic cholera, plague, tetanus, anthrax, glanders, infectious diseases of the eye, and whooping cough, while the division of communicable diseases assumes control of all of the other infectious diseases, and in addition, has charge of the intubation of cases of diptheria and the administration of diptheria antitoxin.

The notification of cases of infectious diseases is effected by means of special postal cards sent in by physicians and institutions. These cards are supplied free of charge by the department. Cases not receiving medical care are frequently reported by neighbors of the patient and many cases are found by the medical inspectors in the schools, and when visiting children who have been absent from school.

DIVISION OF CONTAGIOUS DISEASES.

Within twenty-four hours of the receipt of a notification of a case of contagious disease, an inspector from the department of health visits the family. He instructs them as to proper isolation of the patient, placards the door of the apartment with a sign containing the name of the disease, warning all persons other than occupants of the apartment against entering it, and stating that the patient must not leave the apartment until the notice has been removed by the department of health.

In case of all tenements, or apartments, another placard is placed in the main entrance hall notifying all persons entering the building of the presence of the case of infectious disease, and giving the name and floor address of the patient.

The inspector ascertains the location of the school attended by the children in the family, and sends to the principal a postal card informing him or her of the case and stating that none of the children of that family must be allowed to attend school until a certificate of termination of the illness has been issued by the department of health.

He thereafter visits the case as often as may be necessary to see that isolation is maintained. Circulars of information, giving detailed instructions as to the duties of physicians, medical inspectors, and family of the patient, are sent to the attending physician and to each reported case. Isolation is enforced for at least thirty-five days in scarlet fever and fifteen days in measles, or until desquamation is completed. In case of diphtheria, the inspector takes a culture from the exudate, unless the attending

Digitized by Google

physician has already done so. In this disease, the time of isolation is terminated when a negative culture is obtained, provided that at last ten days shall have elapsed from the time of taking the first culture containing the diphtheria bacilli.

The inspectors do not examine the patient until it becomes necessary to see if desquamation has ceased, or, in the case of diphtheria, when a culture is to be obtained.

If isolation is not maintained, or if, for any reason, the patient is judged to be a menace to public health, his removal to one of the contagious disease hospitals of the department may be enforced.

In cases of a contagious disease occurring in an apartment connecting with a store, the patient is either removed to a hospital, or the store kept closed by the department until the termination of the illness.

Patients may also voluntarily elect to go to the hospital. In all of the above instances, a special inspector called a "Diagnostician" visits the case to confirm the diagnosis. Removal is effected either in an ambulance or coupe, and these latter are disinfected after each trip.

Emergency cases occurring in police stations, clinics, stores, etc., are immediately removed to the hospital for observation and diagnosis.

Printed slips containing the name, address and disease of each case of contagious disease reported during the preceding twenty-four hours are sent daily to all schools, public institutions, dispensaries and public libraries in the city. On Friday of each week, a special list is sent to the Sunday schools.

From these lists, the officials of the public libraries are able to determine if any of their books are in families where infection exists. Orders are sent to the department of health for any such books. They are collected and disinfected before returning them to the library.

In case of death from a contagious disease, the body must be placed in a sealed casket, the burial take place within twenty-four hours, and the funeral be private.

At the termination of the illness, disinfection is ordered by the medical inspector and performed by the disinfectors of the department. Many methods of disinfection of living apartments have been tried and most of them found wanting; formaldehyde gas is undoubtedly the most efficient agent for this purpose but the best way of producing it has long been a mooted question. Various machines or "generators" have been used, but in our experience they have proved to be unsatisfactory on account of their liability to get out of order, and the fact that the gas produced is uncertain in volume and rate of production. Of the chemical combinations producing this gas but one has been found satisfactory in all regards and this one is now used exclusively by the department. It consists of a mixture made of four parts of a forty per cent solution of formalin and two parts of a saturated solution of sulphate of aluminum. Eight ounces of this mixture is poured over one pound of quick slaking finishing lime, for each

Digitized by Google

one thousand cubic feet of air space. This mixture is placed in an ordinary pan in the room to be fumigated, all crevices in the windows having been previously pasted over with paper strips. The outside door is then closed and its crevices pasted over. The gas generates in about fifteen minutes and it requires about five hours to completely disinfect the room. A special placard is pasted on the door of the room and no one is allowed to enter it until the disinfector calls the following day. Bedding and washable clothing are removed in a special wagon to the disinfecting station, where they are thoroughly sterilized and then returned.

After disinfection has been performed, the medical inspector issues permits for the children to again attend school.

Sulphate aluminum C. P.,	60 c. per lb.
Sulphate aluminum Comr.,	12 c. per lb.
Potass. permang. Crude,	24 c. per lb.
Lime,	35 c. per lb.

The above methods are applied in all cases of the acute contagious diseases.

Immediately upon receipt of a notification of a case of smallpox, the patient is removed to the hospital, all persons living in the house are vaccinated and a corps of vaccinators canvass every house within a radius of two blocks, either vaccinating every person or obtaining assurance that they will be vaccinated. The house in which the case has occurred is kept under surveillance and repeatedly visited for a period of twenty-one days. This method has been so effective that any focus of infection is immediately eliminated.

Vaccination is performed by the medical inspectors throughout the entire year, both in the office of the department in the schools and by canvassing the tenement districts. During 1906, the total number of vaccinations exceeded 150,000.

An effective method of limiting the spread of infectious diseases consists of the systematic inspection of school children. During 1906, 5398 cases of contagious diseases were excluded from the public schools of the city, while 96,009 treatments were given in the schools by the medical inspectors and nurses for the minor ailments, such as the contagious eye and skin diseases, and 412,678 instructions were given for pediculosis.

During the past year, 1769 unreported cases of contagious diseases were discovered by medical inspectors during their visits to school children at their homes.

DIVISION OF COMMUNICABLE DISEASES.

This division controls the less readily communicable diseases, and while the danger of infection is carefully safeguarded, the methods pursued are less stringent.

All cases of pulmonary tuberculosis, typhoid fever and cerebro-spinal

Digitized by Google

meningitis are registered and every person (or the family of such person) suffering from these diseases is furnished instructions as to the measures to be taken to prevent their spread.

Bedding, etc., used by persons suffering from these diseases is disinfected. All premises which have been occupied by persons suffering from pulmonary tuberculosis or cerebro-spinal meningitis, on termination of the case, are fumigated with formaldehyde or renovation is ordered.

Charitable assistance or hospital care is provided as far as is possible for all cases wishing or requiring such aid or care.

The general public is educated as to the nature of the above diseases, the precautions to be taken to prevent their spread, the advisability of institution and sanatorium treatment, etc.

A special corps of medical inspectors is always on duty to respond to all requests for the injection of diphtheria antitoxin. In addition to the curative doses, which are repeated as often as indicated, immunizing doses are given to all members of the family in which the case of diphtheria has occurred. Intubation is also performed by these inspectors.

Cases of tuberculosis are never visited without the consent of the attending physician, but full instructions regarding the prevention of the spread of the disease are sent to him and it is presumed that any physician reporting a case will see that the patient is instructed in hygienic and sanitary methods of prevention and cure.

All other cases are visited by inspectors or nurses from the department. The patient is instructed orally and by means of printed circulars as to methods of caring for the sputum, the need of personal cleanliness and hygiene, the importance of fresh air and nourishing food, and all other matters tending to a cure of the disease, and limiting the danger of infection to others. Free sputum cups are provided and in special cases an extra diet of milk and eggs is furnished.

Cases which may be a menace to public health are removed to one of the department hospitals.

The patients are repeatedly visited and instructed, and after the termination of the disease the living apartments are disinfected or renovated.

As the method of infection in typhoid fever is so well defined, a request for information as to the possible source of infection is sent to the physician in charge of the patient, or it is obtained by a medical inspector of the department. Special attention is paid to the water supply and the ingestion of milk and oysters. The source of supply is ascertained and rigidly investigated. A circular of instruction regarding the sanitary care of the disease is sent to the physician in charge of the case, and whenever requested the bedding, etc., is disinfected.

In cerebro-spinal meningitis, the patient is quarantined, children in the family excluded from school, and the apartments disinfected after the case has terminated.

The diseases I have mentioned are those most commonly met with, and

Digitized by Google

their control has been particularly detailed. All other infectious diseases are cared for as the exigencies of the case demand, all this with a view to the most complete isolation and quarantine.

It has been impossible in this limited time to go at all into detail regarding our care of these cases of infectious disease. In fact, the methods of dealing with each individual disease could well be made the subject of full discussion.

Owing to its situation as the most important port of entry in the country, New York City has to meet the problem of infectious diseases among the immigrants. A special arrangement has been made with the United States government whereby these cases are taken directly from Ellis Island to one of the contagious disease hospitals of the department. Upon recovery from the disease, the patients are returned to Ellis Island.

It would seem as though a perfect system of control of infectious diseases would result in their complete eradication. We are constantly trying to make our system approach perfection and undoubtedly in small towns and cities such methods as I have described would prove to be completely effective. In a city like New York, however, contagion can be held in check, but never wholly eliminated. Imported sporadic cases are of frequent occurrence, owing to our heterogeneous, overcrowded, and constantly shifting population. Many of these cases are untreated and so escape detection, but one of the worst phases of the situation is the physician who fails to report his cases. This is of course a violation of the law, and when detected the offender is dealt with summarily, but the temptation to please the family of the patient by avoiding all restrictions, and the so-called nuisance of disinfection, is often too strong to be resisted by our weaker brothers.

So long as human nature comprises the attributes of the strong and the weak, laws, however drastic, will occasionally be violated and punishment, however severe, will not have a wholly deterrent effect. Therefore while a system of control of infectious diseases may be as perfect as human ingenuity can make it, unless the coöperation of each individual in the community can be assured it will fall short in its efforts of ideal attainment.

This ideal coöperation can be reached only by educating the public as to its vital importance, and methods of education are in a broad sense a part of the preventive measures which equal, if not exceed, corrective actions. It is therefore the duty of boards of health to use educational influences in every form, and education should consist not in sporadic, evanescent alarm, which by its very intensity soon swings back into a condition of dull apathy, but it should be offered in an optimistic spirit and be kept up with no thought of discouragement. The persistent and relentless dropping of the water of enlightenment will inevitably wear away the stone of ignorance and indifference.

We have proved the value of education in these matters as an adjunct in prevention, by our results in the campaign against tuberculosis. The

Digitized by Google

death rate from this disease in New York City has decreased fifty per cent in the past twenty-six years. This has been due quite as much to the education of the public as to the control of the individual case.

Public lectures, the public press, coöperation with private or semi-public philanthropic societies, printed instructions, and personal efforts, are all valuable aids. The public should be taken into our confidence as regards the purpose of our methods and the end in view. The public needs to be convinced that we are truly altruistic in our aims and not destructive of individual liberty in our tendencies. When this is accomplished, then we shall enter into Utopia. We shall no longer occupy the anomalous position of not preventing the preventable diseases, but may merit that commendation from the Great Physician of all time: "Well done, thou good and faithful servant!"

Discussion by Dr. C. F. Ball, Rutland.

I feel particularly incompetent to open a discussion of this paper, presented by a man who has been in this work for so many years.

My experience has been rather short, but I have met with several things which have impressed themselves upon my mind.

The first thing—the placing of quarantine notices. We have a written instrument. If we go to a house and lay it on the table, what becomes of it? Absolutely no attention is paid to it. They will tell you they did not know what the paper was. Now it is your business and my business and every health officer's business to take the written instrument and see that the mother or the father has it and knows the contents of it. If they do not understand it—if you are not perfectly sure that they understand it—explain it to them and impress the importance of observing the quarantine regulations.

The reporting of full quarantine to librarians should be not only to the public librarians but to the librarians of the church libraries as well.

The matter of finding where a source of infection is located has given me much trouble. At the present time I am having some trouble with regard to scarlet fever. It seems to be increasing, isolated cases breaking out in various sections of the city. The quarantine regulations have been attended to and the disinfection rules have been attended to. I feel that it is in some of our schools. We should pay more attention to the disinfection of our schoolhouses after their close in the spring. We have, comparatively, only a few cases of scarlet fever, but a large number of cases of chicken pox. It is not this disease in itself that is particularly dangerous, but it is the boy who has not has had the disease and who has to be kept out of school on account of some member of his family suffering from it. Perhaps this child is backward in his school work and needs every day to keep up with his class. I have had a case where a boy was obliged to stay away right at the close of the school year when they were preparing for examinations and some of the examinations were going on. Now it is a

Digitized by Google

pity that so many children are obliged to remain away at these critical times. Many of these cases could be prevented if due care was taken by everyone, and if we fumigate our school houses properly, it will help to relieve that situation somewhat.

Regarding the matter of reporting cases by telephone, I would say, I have not been very particular in requiring a written report, but I am determined, when I return home, to be more particular in getting reports in writing.

In looking over my records I find that scarlet fever has not been quarantined for thirty-five days in but few cases. Some have not been quarantined one half of that time. I am glad to know the length of time a scarlet fever patient is under the rules and regulations of a quarantine in New York City.

With regard to reporting cases of tuberculosis. The number of deaths is far in excess of the number of cases reported. That shows a lack of attention by the physicians in reporting their cases.

I would like to ask Dr. Darlington what is done in New York City regarding the placarding of pneumonia. I think this will soon be considered a disease to be placarded at least. I would like to ask for a description of the formalin in solution used by Dr. Darlington and its expense per thousand cubic feet.

Discussion by Dr. E. E. Whitaker, Newport.

A gentleman reported a deficiency in the reporting of the number of cases of tuberculosis and the number of deaths from tuberculosis. I did not understand that the physicians are expected to report to health officers the cases of tuberculosis. I understood such a report was made direct to the secretary of the State Board of Health.

Dr. C. C. Caverly, Rutland.

They are to report them to the secretary of this Board.

Dr. B. D. Colby, Sudbury.

Are you expected to keep a case of scarlet fever under quarantine thirty-five days provided desquamation has been complete?

Dr. Holton.

There is no given time that the quarantine should be maintained. However, it should not be raised until desquamation is completed and any unusual discharges from the air passages have ceased.

Dr. F. E. Clark, Burlington.

Are some of the books in public schools and public libraries destroyed and some fumigated, and what do you consider a safe and good method for fumigating books?

Digitized by Google

Dr. Holton.

Books showing discoloration, apparently from the secretions of the patient, should be burned. Others may be thoroughly fumigated by standing them up in a box open, or hanging them open on a line.

Dr. C. S. Caverly.

I am told that there are very few of the so-called forty per cent solutions of formaldehyde that contain anything like forty per cent. The higher price you pay, the nearer you come to getting what you call for. Dr. Darlington spoke of the cost of the chemicals which we use in disinfecting and said they were a little more expensive than those they used. I have taken pains to look up the price of some of these articles. I find for one thousand cubic feet of air space the quantity of sulphate of aluminum would cost at wholesale fifty-one cents for chemically pure; forty-three cents for the ordinary; and with permanganate of potash only thirty cents. Formalin can be procured at twenty cents per pound or $1.50 per gallon. Permanganate can be procured for ten cents for six and one half ounces, that is about one and one-fourth cents per ounce. We take four parts of formalin and two parts of aluminum and pour it over one pound of quicklime. We save by our method from thirteen to twenty-one cents. Consequently our method is the cheaper.

Mr. H. H. Wheeler, South Burlington.

If you get the high priced goods you get a nice clean article in a nice clean bottle, but I have yet to detect any great difference in the way they work out. The dollar goods is a little yellow; it is not quite as transparent as the higher priced goods.

Questions by Dr. H. D. Holton.

Do you have full quarantine for measles?

Dr. Darlington.

Yes. Unfortunately a great many of the immigrants never call in a physician for measles. We can usually learn of these cases by the children attending school. We have increased our school appropriation $79,000 this year and we have eighty more inspectors.

Dr. Holton.

What is the quarantine for whooping-cough?

Dr. Darlington.

We have not been able to isolate that. The great difficulty is that the public do not appreciate the benefits of hygienic sanitation. Take a child who has adenoids. It takes $60 a year to educate a child. He is backward.

Digitized by Google

Does not get along with his lessons at all. The only remedy here is, take the child to a physician and have the growths removed and mark the change. There is a moral obligation too. All that a man hath, would he give for his life. Then—Am I my brother's keeper? And the answer is, Love thy neighbor as thyself.

PURE FOOD.*

C. P. MOAT, SANITARY CHEMIST, VERMONT STATE BOARD OF HEALTH.

Two years ago when I read you a paper on what we were doing with the pure food question here in Vermont, it was of interest more especially to those of us who had the enforcement of the pure food act at hand. Now since the passage of the Federal laws relating to meat inspection and the long-hoped-for Food and Drug Act, the question is one of national importance as is shown by the action of the legislatures of many states in changing their state laws to conform with the National Food and Drug Law, the numerous articles in the newspapers and magazines and the discussion of the subject in everyday life.

For this reason it is hard to say anything new on the subject, but as we all desire pure foods and as it is our duty to enforce our Food and Drug Act, I will try to give some idea of our present food law and what we are accomplishing under its provisions.

The Federal meat inspection law, which passed June 30, 1906, provides for the inspection under the direction of the secretary of agriculture of all meat and meat food products so as to prevent any such products that are unsound, unhealthful, unwholesome or otherwise unfit for human food, entering into interstate or foreign commerce. The secretary may cause inspection and examination both ante and post mortem of these meat food products, and also shall make sanitary regulations for the establishments where the products are slaughtered or prepared for food. Only farmers and retail butchers are exempt from this inspection, but they are subject to the provisions of the law placing a penalty on offering for sale or for transportation in interstate or foreign commerce any meat products that are unwholesome or otherwise unfit for food.

The National Food and Drug Act entitled "The Act for preventing the manufacture, sale or transportation of adulterated or misbranded or poisonous or deleterious foods, drugs, medicines, and liquors, for regulating traffic therein, and for other purposes, was passed June 30, 1906, and will be known as "The Food and Drug Act June 30, 1906."

* Paper read at School for Health Officers, June, 1907.

Digitized by Google

This act prohibits interstate trade in adulterated or misbranded foods or drugs. The rules and regulations for carrying out the provisions of this act are to be made by the secretary of the treasury, secretary of agriculture and secretary of commerce and labor. The examinations are to be made under the supervision of the bureau of chemistry, department of agriculture and violations are to be brought to the attention of the proper United States district attorney.

Foods and drugs are defined, and also what is deemed adulteration and misbranding in both these. No dealer is to be prosecuted when he can establish a guaranty from the wholesaler, jobber or manufacturer residing in the United States.

The act went into effect January 1, 1907.

The rules and regulations mentioned above were published as circular No. 21 and interpret and explain certain clauses of the law. The intent of the law is to protect the consumer from fraud, unwholesome products and unknown habit-forming drugs, as products containing same must state presence on label and the purchaser can know what he is buying from the label, as misbranding is prohibited. The retail dealer is protected if he buys properly guaranteed products from the manufacturer or jobber.

Regarding the guaranty: To avoid attaching a separate guaranty to the bill of sale or invoice and to facilitate business, the department has arranged to have a general guaranty filed with the secretary of agriculture and a serial number is given to those parties, which number must appear on every package. Much abuse has been made of this provision and certain unscrupulous manufacturers have been advertising their goods as guaranteed by the government. This has reached such a stage that the secretary of agriculture has issued Food Inspection Decision 70 on the abuse of guaranty for advertising purposes. This states that the department accepts no responsibility for the guaranty filed with them. The guaranty is that of the manufacturer or dealer and it must not be stated or implied in any fashion that the department or government endorses or guarantees the product to which the guaranty and serial number are attached. The misuse of the serial number is a misrepresentation, and in case of such abuse the serial number will be withdrawn and the guaranty returned after proper notice.

PRESERVATIVES.

Poisonous or deleterious preservatives shall only be applied externally and the secretary of agriculture shall determine from time to time regarding the wholesomeness of colors, preservatives and other substances added to foods.

The secretary may examine the raw materials used in the manufacture of food and determine whether any filthy, decomposed or putrid substance is used.

Digitized by Google

MISBRANDING.

The principal label shall consist of the name of the substance or product; the name of place of manufacture in the case of food compounds or mixtures; words which show that the articles are compounds, mixtures or blends; or words designating the substances or their derivatives and proportions required to be named in the case of foods and drugs. All these required words shall appear upon the principal label without any intervening descriptive or explanatory reading matter. If the name of the manufacturer and place of manufacture are given, they shall also appear upon the principal label. Nothing false or misleading in any particular shall be used. Name and address of manufacturer or producer if given shall be true name.

Food inspection decisions are published from time to time setting forth views of the department regarding the interpretation of the law.

The Vermont Food and Drug law, as amended by the Acts of 1906, is changed in sections 2, 3, 4 so that it conforms to the Federal law in the definitions of food and drugs and when they are deemed adulterated or misbranded.

Section 10 of the 1904 law relating to calves under four weeks old is repealed by No. 182 Acts of 1906.

Section 11 of the 1904 law is changed to include the Director and Chemists of the Laboratory.

Section 20 of the 1904 law is changed and the duties of the state's attorney are set forth.

Section 21—regarding standards—is repealed.

Renumbering of sections from section 4 on.

This will be published shortly as amended, with the rules and regulations of the State Board of Health, together with standards for purity of food products in Vermont.

Besides our food and drug law we have on our statutes the following laws regarding food products:

General Food Law—5073, penalty for sale of unwholesome provisions; 5075, penalty for adding injurious ingredients to foods.

Alcoholic Beverages—4473, penalty for sale of adulterated liquors; 1902—90, license law, sections providing for analysis of suspected samples at the State Laboratory; 1904—115, amended license law regarding analysis; 1906—145, amended license law providing for analyses of submitted samples from wholesale dealers.

Candy—4345, penalty for adulterated candy; 1906—150, an act to prohibit the selling, furnishing, or giving away to minors of candy containing intoxicating liquor.

Dairy Products—4327—4333, penalty for adulterated milk, etc., including 4331, milk standard, which will be referred to later on; 4975—4979, penalty for sale of diluted or adulterated milk in general and to butter and cheese

Digitized by Google

factories; 1900, labeling of butter substitute, imitation cheese and penalties for same.

Lard—4341, 4342, labeling of compound products.

Maple Products and Honey—4344, penalty for adulteration.

1906—182, act to prevent sale of diseased animals and meat, including flesh of calves under four weeks of age.

The rules and regulations of the Vermont State Board of Health are similar to the Federal, but based on local conditions.

OUR WORK HERE.

The legislature of 1906, which amended the food law as before stated, also gave us an appropriation of $2500 to enforce this law. This enabled us to have another chemist, who in addition to laboratory work assists the State Board of Health and health officers in inspecting and collecting food products. This allows us to pick up samples at any place in the state at any time, thus adding the moral effect of frequent and possible inspection.

Our same method of publication and notification is still being used with the following program in view: To induce manufacturers and jobbers to have their goods comply with the law; to give wide publicity to all food frauds; to induce dealers to leave illegal goods alone; and to induce the public to demand pure food products and beverages.

We desire the help and coöperation of the daily press in publishing our lists of articles below standard. By this method our lists, which are published in the Bulletins, can be more widely spread and discussed. We have some prosecutions pending and a number in view which will strengthen our position in enforcing the law.

MILK.

The milk work which was begun last year in our efforts to have the dealers produce clean milk has been carried on to a greater extent this year and cleaner milk is the result. During the collecting trips of the chemist, we have detected several cases of watered milk as well as a sample of cream preserved with formaldehyde. The seller of this product pleaded guilty and was fined in our local court.

Clean milk means much less chance of infection by tuberculosis. Cleanliness in dairy products must be the watchword, as that is where it concerns our health, while watered and low standard milks affect our pocket books. Both must be looked out for in our food and drug work, but as sanitarians and officers concerned with the public health the former is more important to us. We do not want the farmer to feel that we are persecuting him in the enforcement of the food law instead of applying the law to other food products alone, but as this is a dairying state, will it not be to our advantage in every respect if we can say—or better yet, hear

Digitized by Google

others say—that Vermont milk is clean milk. What would that mean? I believe it would mean higher prices for the better product, better health, more summer visitors, added income to all of us.

We have examined 688 samples of milk during 1906 and the first six months of 1907, with the following results:

Above standard	Below standard
319	369

Outside of dirty and unwholesome milk, the chemical standards by which the above were judged were those similar to the United States department of agriculture, with total solids not less than 12 per cent, fat 3¼, and solids not fat 8.5.

After June 1 our standard will have to be that provided in Statute 4331 of our Vermont Laws, viz.: Shall contain not less than 12½ total solids, 9¼ solids not fat, and in May and June total solids 12.

Our authority in using the department standard was taken away by the repealing of Section 21 of our food law by the Acts of 1906, and the attorney general rules that the old standard holds.

This is unfortunate as out of the milks examined during the six months of 1907, 443 go above the 8½ per cent Federal standard, solids not fat, while only 73 above the 9¼ standard Vermont standard, demonstrating the very high requirement. This must be corrected at the next session of our legislature.

MAPLE GOODS.

During the past two seasons we have examined fifty samples of maple products and found ten below standard. This year's goods were free from adulteration and this is gratifying, as this is the time for the adulteration of Vermont goods to cease. The Federal Food and Drug Act will prevent the branding of maple products made outside our state "Pure Vermont Goods" and as only goods may be labelled Vermont that come from here, it behooves us all to have these goods pure. The product is a luxury and as such should bring good prices to our Vermont farmers. We are fortunate in having with us Mr. C. H. Jones of the Vermont Experiment Station, who has made an extended study of maple products. Mr. Jones's method for the detection of adulteration of maple goods is the one used by us.

CANNED MEATS.

During the summer of 1906, when the popular feeling against canned goods was running high, we made analyses of the leading brands on the market. A number of these were preserved, but aside from that seemed true to name.

Judging from the varied reports from different laboratories concerning the preserving of these products, it would seem as if preservatives were

Digitized by Google

only used in meats that were on the verge of decomposition before canning.

Our Federal meat inspection ought to prevent such a practice.

CANDY.

Early this year thirty-seven varieties of the cheaper grades of candies were examined, all of which were above standard. The manufacturers are now using an unbleached glucose which accounts for only traces of sulphites. There is always much talk about poisoned candy, but I have never seen any proof of the poisoning from this candy. The great trouble seems to be caused by the age of the children who consume this product. The product is largely consumed by children and the trouble is usually by overeating and unbalancing the proper ration.

SOFT DRINKS.

The most highly colored varieties of these are consumed largely by the young, and the practice of preserving and misbranding these will have to be stopped in this state. We are going to examine the brands sold here when the summer season arrives and all misbranded and preserved goods will have to be withdrawn from sale or pay the penalty.

We had a sample a few days ago improperly labelled, colored with coal tar coloring, flavored with imitation flavoring and sweetened and preserved with sacharin. Goods of this charater cannot be sold in Vermont this summer.

DRUG WORK.

This is a line of work which we hope to do more with in the future. It requires much more time than the food work and so we have not been able to give time to it in the past. Reports from other states show that adulteration figures largely in this line. A number of the catarrh and asthma remedies which might contain habit-forming drugs were examined and cocaine found in two. They were also judged as to correctness of labelling and seven were labelled incorrectly out of fifteen.

As the Vermont law does not call for the statement of the narcotic drugs on the label until July 1, nothing can be done at present. Toilet articles, as lotions, cosmetics, eye washes, dandruff cures, etc., need attention, as many of them contain articles injurious to health as well as being economic frauds in many instances.

LIQUORS.

Our food and drug work planned for the spring months has been greatly retarded by the liquor work undertaken under the Act of 1906, requiring applicants for wholesale licenses to submit samples of their goods for analysis. As the standard of the law is that of the United States

Digitized by Google

Pharmacopœia and as liquors are recognized in our Food and Drug law, I will consider them in this paper. The summary of these analyses to date is:

Conform to the United States Pharmacopœia Standard,	70
Do not conform,	66
No standard, passed,	124
" rejected,	3
Total,	263

Those not conforming are usually colored with caramel, or are high in residue, or low in alcohol. The first two reasons are used to conceal lack of age. The United States Pharmacopœia only recognizes whiskey, brandy, red and white wines of low alcoholic content, so that all other samples have no standard stated by the license law. These are looked over and judged by our food standards and passed unless badly adulterated, in which case attention is called to them. If the intent of the law was to have only pure liquors sold it should be changed so that our food standards as well as the United States Pharmacopœia may be used, and further, so that the local commissioners shall be notified what liquors can legally be sold. These adulterations are economic rather than frauds, pertaining to our health, but as some liquors are used as medicines they should conform to medicinal standards. Our results up to this time indicate that the majority of dealers agree with us in enforcing the food laws and I think we have done something toward better and purer food and less misbranding here in this state.

I have a few suggestions that I think might be considered between now and our next legislature: Change of our milk standard to comply with the national standard, or anyway to a standard that dealers selling pure milk can comply with.

Regulating the sale of cocaine so that it can only be sold on the prescription of a properly qualified person, Doctor of Medicine, Dentist or Veterinarian. Massachusetts and New York have recently passed such a law.

The matter of short weights. Lately I have noticed several milk bottles to be a trifle short in their capacity. The state of North Dakota added a clause to its food law recently, compelling packages, bottles, and containers to bear the true net weight, and the name of the real manufacturer or jobber expressed in clear and distinct English words in black type on a white background. Since this was agitated in North Dakota the average gain in weight on canned goods, peas, corn, tomatoes, etc., was found to be 128 grams (four ounces) on each can. Quite a difference in this age of high prices.

THE PROPER LABELLING OF WOOD ALCOHOL.

This article, whether under the name of methyl or wood alcohol or some of its fancier names of Columbian spirits, etc., should be plainly labelled

Digitized by Google

POISON. We had an instance of this some time ago when we received two grades of wood alcohol, one labelled *Wood Alcohol—Poison,* the other *Columbian Spirits,* etc., etc., with a small note—"This may not be taken internally."

This covers but a small part of the subject of pure food, but is offered as a basis for our general discussion.

DISCUSSION.

C. H. Jones, Chemist Experiment Station, Burlington, Vt.

I am not exactly a pure food chemist, and it is therefore with some diffidence that I stand before you to open the discussion on this important portion of your Board of Health Laboratory work, namely, "Pure Food." It has been my privilege to be a member of the Association of Official Agricultural Chemists for several years, to have attended many of their meetings and to have taken part in their work. This association, as you know, has been indirectly, at least, responsible for most of the methods and standards that obtain in the control work of your Laboratory.

What is meant by pure food laws and regulations? You have already been told, but I am going to tell you again. They are simply measures whereby you and the general public are enabled to get just what you want to eat. Do you want pure tomato catsup, or some pickled in benzoate of soda? When these measures that have been discussed have been enforced you can doubtless get either; but I doubt if you could before. Personally, I prefer to add formalyn myself to the milk I use, if necessary, rather than have some irresponsible farm help dump it in, hit or miss, under the alluring title of "Freezine," "No Ice Needed," etc.

Now, a word as to standards. According to the old saying, "He discovers who proves." It would seem that this was followed by the United States chemists and sundry state controls in formulating standards for the various food products. Unbiased and representative data were in the main consulted, and the result has been that pure products of American origin can in most instances be clearly separated from their preserved or inferior competitors. Take the case of preservatives. As you all know, carefully conducted experiments have shown their injurious effect on the human system; and it is, therefore, the ultimate intent of the government to exclude their use. While I believe that there is a use for preservatives, it is my emphatic opinion that man's chief articles of food, including milk, flour, meat, vegetables, etc., should be free from them. On the other hand, it might be allowable to permit the use of benzoate or salicylate of soda in Worcestershire sauce, its presence being so stated on the label.

To consider briefly one or two specific cases illustrating the work of your State Laboratory, let us mention milk and maple sugar. Take the former: Is there anyone who does not want milk clean, sweet and free

Digitized by Google

from preservatives? This topic alone might be discussed indefinitely. Milk inspection has always been carefully looked after in all board of health laboratories, and the state of Vermont may well be thankful that a start has been made on these lines within its borders. As this question will later receive the attention it merits, I need dwell no longer upon it. Look at the maple sugar situation. The past season was a good one, and even though national and state laws had already taken a hand in the matter, it is probable that, so far as the original producer was concerned, but little adulteration would have been attempted. This has been shown by the results of your inspection. The seasons from 1899 to 1906 inclusive were, however, poor and the temptation has been strong to help out by a little granulated cane sugar in many instances. Pure maple products should command luxury prices and not be compelled to compete with the ordinary cane product. Already the salutary effect of the national law is felt, and you can now actually purchase mixtures of maple and cane sugar where formerly only Vermont Pure Maple (made in Chicago) was offered.

As you have gathered from Mr. Moat's paper, this pure food inspection is comparatively new to Vermont. In many other states, notably Massachusetts, such control has been in operation for years.

In closing, the point I wish to impress on your mind is *to work gradually towards the goal.* Miracles are not to be accomplished in one year or two, particularly with your limited appropriation; but, aided by the national and state laws, this branch of your work is bound to grow so that in the near future we can be assured that Vermont is no longer the dumping ground for any old food product.

This branch of your Laboratory's work is a very important one and should merit an enthusiastic discussion. I trust you will ask the officials in charge all the questions that occur to you.

Dr. Frederick Fletcher, Bradford, Vt.

Mr. Moat said we were getting short measure. I want to know if wine measure is the legal measure for milk.

Dr. G. H. Branch, Grand Isle, Vt.

Is it necessary that butter colored with butter color should be so labelled?

Discussion by Dr. C. M. Ferrin, Essex Junction.

About a year ago a butcher called me to his shop to see a carcass. I found a very good carcass of a cow. It was in every respect fair to look upon, but the lungs were very much diseased. I took a large slice and sent it to Dr. Rich and he returned the answer that it was tubercular. I asked the butcher what he was going to do with the body. He said he did not know. I said, "You must not use it for food." He said he would take it to the rendering plant and I have every reason to believe he did. After I received Dr. Rich's answer I wrote him again and asked him what, if

Digitized by Google

anything, had been done about it. The creature came from a herd in Colchester. The man brought it in good faith, but it was in this condition. I wanted to know if something could not be done about the herd. He made no reply. The question is, What has been done with that carcass? It was good looking beef. What was my duty farther than that?

Discussion by Dr. C. F. Ball, Rutland, Vt.

I am interested in the suggestions Mr. Moat made with regard to the need of a law in this state requiring a prescription from a physician for the sale of cocaine.

I have a case in my town which I am following up rather closely. I am certain that cocaine is sold to a little girl. She can go to one of our drug stores and tell them that a certain man wants fifty cents' worth of his medicine. There is nothing written on the box, but examination of its contents shows it to be cocaine. At one time the box did come back with the word "Poison" on it. This little girl goes and gets it about once a week. The man is a railroad employee. This is very evident that our laws are lax. I haven't quite enough evidence to make a prosecution, but I am working that way. Certainly the sale of morphine, cocaine, etc., is on the increase. Some of the stores are selling without a prescription but are placing a label on the container.

Closing Discussion on "Pure Foods," by C. P. Moat, Burlington, Vt.

With regard to Dr. Ferrin's question about the beef. I think that the beef could not be legally sold. It is, of course, a question of wholesomeness, and a cow with a badly tubercular lung would not be held to be good, wholesome beef by most of us.

Regarding the wine measure as the legal measure for milk. Wine measure is the legal measure for milk in Vermont.

The United States government allows butter color in butter. I do not know what our new rules and regulations will do regarding that matter. Our new law does not go into effect until the first of July. I have not a copy of our new regulations so do not know what stand we are really going to take. Nothing will be done with decisions of that sort under the pure food law until further notice. We will not prosecute the retailer without giving him the benefit of the doubt and a warning.

In closing let me say that we must realize that the pure food question is a question of education. Like everything else, the sooner everyone demands pure foods, the sooner we will get them.

Dr. A. Morton, St. Albans, Vt.

In taking up the discussion of Mr. Moat's paper I propose to confine my remarks almost wholly to medicinal agents.

The pure drug requirements are very drastic. Each article must conform

Digitized by Google

to the pharmacopœial or national formulary standards or be properly labeled.

Before the pure food and drug law went into effect the physician had no way of being sure that the drugs he used were pure, except as he depended upon the reputation of the manufacturer. To say that the manufacturers sadly abused his confidence is to state the case mildly.

Remedies were misbranded. The amount of drugs in tablets could not be depended upon, and I have been told that some manufacturers substituted cheaper drugs and drugs of an entirely different action.

Two-grain quinine tablets contained anywhere from one grain to a grain and a half. Tablets which were supposed to contain 1/100 grain of nitroglycerine were found to be deficient and now the drug houses tell us that it is impossible to make a nitroglycerine tablet that will maintain its strength. Morphine and strychnine tablets were often inaccurately made. Preparations of chloral and closely allied substances were foisted upon the medical profession under certain trade names as perfectly harmless. Tinctures and fluid extracts could not be depended upon, some being stronger while many were weaker than the pharmacopœia called for.

The crude drugs varied very much from the standard required, although before the law went into effect the manufacturers claimed to be satisfied that the standard was just; since then, however, many protests have been received claiming that it was impossible to produce certain drugs of the required pharmacopœial strength.

It seems strange that these men were perfectly willing that the physician should use these drugs for years supposing them to be of the official strength, and wait until the law compelled them to correctly label their products when they were under the proper strength.

I do not wish to say much in regard to the manner in which the law will effect patent medicines, as this has been gone over time and again in the journals and newspapers. It seems certain that if the requirements of the law are strictly adhered to, many of the concerns manufacturing these nostrums will be forced out of business and that the general use of them by the public will become less and less.

I think the subject of medicinal foods might well be discussed under this title. While not impure under the strict interpretation of the term, still we as physicians often get an erroneous opinion of their food value. This is often brought about either through the carelessness of the physician or through the mislabeling by the manufacturers, and the misleading statements of the traveling salesman. We are often told that the dose recommended is sufficient to maintain our patients' vitality even when used over a long period of time.

Now if we as physicians are careful to investigate the facts of the case we will find that our patients, even when taking the best of these foods, do not receive more than a fifth of the nutrition necessary to maintain the

Digitized by Google

equilibrium of the body and fully one half of this energy is derived from the alcohol which the food contains.

The council of Pharmacy and Chemistry have recently made some very interesting analyses of medicinal foods from nine different firms.

A patient taking the full daily dose recommended by these firms would receive, exclusive of the alcohol, only from nine to a hundred and eleven calories a day. A sick person needs about fifteen hundred calories a day.

If we take the best of these foods, the one that furnishes the most calories, it will be readily seen that our patients would receive in a day hardly one tenth the amount of nourishment that they should.

This misconception has been fathered by the manufacturers, and while we perhaps have not been poisoning our patients, still many of us have labored under a false sense of security and it is a great wonder in some instances that we have not starved our cases.

If a patient should take enough of these foods to obtain the required amount of nourishment he would be in an alcoholic stupor most of the time, for most of them contain over fifteen per cent alcohol. If we wish to give alcohol, let us do it, but let us not give it as a beef product.

We can by a very little trouble nourish our patients far better by using milk prepared in various ways, eggs and beef. It only takes two quarts of milk to yield fourteen hundred calories, enough food to amply nourish our patients, with this we can combine eggs, jellies, etc., so as to give our patients a variety.

It seems to me that our law ought to be amended so that the manufacturers would be obliged to print on the labels of medicinal foods the food value in calories.

FOOD AND DRUG INSPECTION.

By L. P. Sprague, M. D.

The work in this department of the Laboratory has been largely confined during the past three months to the analysis of maple products. The work on the milk supply of the cities and towns has been continued and the miscellaneous foods and drugs submitted have been analyzed. Some of the samples previously collected have beeen analyzed, but the work along this line has been suspended because of the maple sugar work. It is evident that analyses of maple goods must be made during the season to be of any value. There are still at the Laboratory unanalyzed samples which were collected during January and February. These will be analyzed as

Digitized by Google

promptly as possible and the results sent to dealers from whom they were purchased. A summary of the last three months' analyses will be found in tabulated form on pages 28 to 41.

MAPLE PRODUCTS.

Two hundred and eighteen samples of sugar products, of which three were below standard, have been analyzed. These samples of maple sugar and syrup were purchased by the local health officers throughout the state and sent to the laboratory for examination. They were purchased of the dealers who were selling maple products at retail and no samples were taken of sugar which was to be sent out of the state. Had this been done, a larger number of adulterated samples might have been found. In the analysis of these products, consideration was taken of the following facts:—amount of precipitate thrown down with lead sub-acetate; the total ash; insoluble ash; and the alkalinity of each. In suspicious cases the malic acid value was also determined. The standard for maple products states that maple sugar shall contain in the water free substance not less than 65 per cent. of maple sugar ash, and maple syrup shall contain not less than 45 per cent. of maple syrup ash. Of the samples condemned two were sugar and one syrup. In all of these the lead sub-acetate precipitate, the ash and the malic acid value were low. The results of these examinations were very satisfactory, as it shows that very little adulterated maple sugar and syrup is offered for sale in this state.

MILK.

One hundred and sixty-one samples of milk and cream have been analyzed and of these only thirteen, or eight per cent., were below standard. Of the thirteen below standard two were submitted because of suspected udder disease, so that only eleven dirty samples were collected. Second samples have been collected from all except one of these and found to be clean. The remaining sample, that of Mr. Ballard of Poultney, was milk which he was temporarily buying, the sample from his own dairy being clean. While these samples do not include the entire state, and the percentage would doubtless be higher if it did so, it shows a very gratifying decrease in the amount of dirty milk being sold.

SPICES.

Twenty-six samples of spices have been examined, of which eight were illegal. These spices were purchased in the open market and were all in cartons. Some of these packages were not tightly closed so that the contents leaked out and others, while properly closed, were in ordinary paper bags which did not prevent the loss of volatile substances and offered no protection against moisture. The weight was marked on all the cartons and the contents of the packages were weighed in all cases. In most cases

Digitized by Google

the weight agreed with that stated. Those which were below weight were illegal. In the examination of the spices the microscopical examination was considered more important than the chemical, and consequently was largely used, chemical tests being used to supplement the microscopical examination and a complete chemical analysis being made in doubtful cases.

Pepper.—Seven samples of pepper were examined and none were found to be adulterated and the weight in only one was below that stated on the package. The following are the chief adulterants to be looked for:—pepper shells, ground olives stones, buckwheat middlings and other cereals, sand and sawdust.

Cinnamon.—Four samples of ground cinnamon and one of cassia were examined. Two of these were found to be below weight and the cartons were insecurely sealed so that the cinnamon had lost much of its volatile matter. From the odor of one of the packages it was hardly possible to determine whether the package contained cinnamon or not.

Cloves.—Six samples of cloves were examined, of which four were below standard. Two of these weighed less than the amount stated on the package, while two contained an excess of clove stems, the standard allowing only five per cent of clove stems. The chief adulterants to be looked for are clove stems, cocoanut shells, allspice, cereals, tumeric, sand, and sawdust. Exhausted cloves from which a portion or all of the volatile oil has been extracted are sometimes sold, but are more commonly used as an adulterant of other cloves.

Mustard.—Four samples of mustard were examined, all of which were above standard. The chief adulterants used are excess of mustard hulls, cereals, tumeric, and weed seeds.

Ginger.—Three samples of ginger were examined, all of which were standard. Exhausted ginger is sometimes sold and the chief adulterants are cereals, tumeric and sawdust.

CANNED MEATS.

Fifteen samples have been examined, of which two were illegal. The two illegal ones were Vienna sausage, both preserved with boric. This is the third sample found preserved with a boric compound. The manufacturers claimed that these were old products and that the newer ones do not contain a preservative. It emphasizes the fact that the dealers should secure a guarantee from the manufacturer or not sell the products. The meats were all true to name and those containing no preservative were in a wholesome condition.

HEADACHE REMEDIES.

Twelve samples of headache remedies have been analyzed and eleven found to be illegal because of misbranding. In most cases the amount of

Digitized by Google

acetanilid was not stated on the label or if so it was not in proper form. These samples, together with those previously analyzed, show that all headache remedies depend upon acetanilid or some of its derivatives, chiefly phenacetine, for their curative properties. This is combined with caffein, sodium bicarbonate, camphor, cannabis indica, and some excipient. The amount of acetanilid or phenacetine contained as a dose varies from one to five grains. When we consider that acetanilid is a powerful heart depressant and that the average dose is four grains, not to be repeated inside of three or four hours, it will be seen how extremely dangerous it is to take the large doses and repeat them in one half or even one hour, as is so frequently stated in the directions on the preparations. As these all contain practically the same drugs, it makes no difference which one of the remedies is used, but great care should be taken that too large a dose is not administered.

FLAVORING EXTRACTS.

Twenty-two samples of flavoring extracts have been analyzed and twelve found to be illegal. This subject was discussed in Bulletin No. 3, so will not be treated at length now. The illegal products were chiefly vanilla and lemon extracts. The lemon was low in lemon oil and in two cases samples of the same brand were submitted by the manufacturer and found to be below standard. In both cases the manufacturer stated that the correct percentage of lemon oil had been added. These results show carelessness in the methods of manufacture or the alcohol used is not of sufficient strength to dissolve the oil. The vanilla extracts were illegal chiefly because they were adulterated with coumarin.

CHEESE.

Samples of cheese sold in the town of Brattleboro were analyzed and all were above standard. The amount of fat varied from 54.99 per cent. to 57.80 per cent. Standard cheese must contain at least 50 per cent. of milk fat.

MISCELLANEOUS MEATS.

Samples of miscellaneous meats have been examined chiefly to determine if the animal was healthy when slaughtered. The parasite trichina was found in three samples, which shows that wormy pork is more common than the general public suspects and all pork should be thoroughly cooked before it is eaten.

MISCELLANEOUS ANALYSIS.

The analysis of other products, as cider vinegar, olive oil, catsup, preserves, etc., will be found summarized in the tables.

Digitized by Google

REPORT OF EXAMINATIONS AT THE STATE LABORATORY.

Examination of Liquors from Secretary of State.

Conform to U. S. P. std.	54
Do not conform to U. S. P. std.	50
No standard	104
Total	208

Liquors Submitted by License Commissioners.

Conform to U. S. P. std.	1
Do not conform to U. S. P. std.	5
No standard	6
Total	12

Specimens Examined During First Quarter of 1908.

Water		126
Typhoid		199
Positive	30	
Negative	169	
	199	
Diphtheria		518
Positive	210	
Negative	300	
Suspicious	8	
	518	
Tuberculosis		358
Positive:		
Male	54	
Female	44	
Sex not stated	5	
	103	
Negative:		
Male	124	
Female	115	
Sex not stated	16	
	255	
Miscellaneous		94
Malaria		5
Negative	5	

Digitized by Google

MILK ABOVE STANDARD EXAMINED FROM FEBRUARY 10, 1908, TO MAY 10, 1908.

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
55049	2-10-08	A. W. Grioux	Island Pond	14.15	9.25	4.9	Normal	
55050	"	Geo. Andrews & Son	" "	14.14	9.14	5.0	"	
55051	"	Stevens Bros.	" "	13.67	9.17	4.5	"	
55052	"	Myron Waterman	" "	13.06	9.06	4.0	"	
55104	"	Baker & Tupper	Burlington	12.69	8.79	3.9	"	
55200	2-17-08	C. E. Brewster	Randolph	13.28	8.68	4.6	"	
55460	2-24-08	B. Hier	Proctor	12.20	8.50	3.7	"	
55461	"	J. Turner	"	12.81	8.81	4.0	"	
55462	"	C. Ladabouche	"	12.33	8.73	3.6	"	
55463	"	F. C. Russell	"	12.00	8.50	3.5	"	
55464	"	R. C. Mead Estate	"	12.81	8.81	4.0	"	
55465	"	E. Myatt	"	12.32	8.52	3.8	"	
55493	2-25-08	C. E. Ayer	Alburgh	12.66	8.66	4.0	"	
55538	2-21-08	C. K. Tyler	Burlington	13.16	8.66	4.5	"	
55539	"	River View Farm	"	12.70	8.90	3.8	"	
55540	"	Baker & Tupper	"	12.94	9.04	3.9	"	
55546	"	" "	"	14.01	8.81	5.2	"	
55541	"	L. E. Haynes	"	13.05	8.85	4.2	"	
55542	"	Steele & Butler	"	12.56	8.56	4.0	"	
55548	"	H. A. Bixby	"	12.81	8.81	4.0	"	
55544	"	C. C. Bliss	"	12.93	8.83	4.1	"	
55545	"	I. H. Buck	"	13.42	8.92	4.5	"	
55547	"	D. Bourne	"	13.05	8.95	4.1	"	
55555	"	D. Bourne	"	12.20	9.60	3.6	"	
55548	"	J. G. G. Downing	"	12.68	8.58	4.1	"	
55549	"	T. P. Welch	"	13.05	8.85	4.2	"	
55550	"	D. J. Millham	"	12.80	8.60	4.2	"	
55551	"	H. B. Chittenden & Son	"	13.05	8.85	4.2	"	
55552	"	O. E. Barber	"	12.80	8.70	4.1	"	
55553	"	E. J. Viens	"	13.30	8.90	4.4	"	
55554	"	I. E. Chase	"	13.42	8.92	4.5	"	
55556	"	J. E. Maynard	"	12.92	8.62	4.3	"	
55557	"	Mrs. F. X. Saltus	"	12.56	8.56	4.0	"	
55558	"	F. L. Murray	"	12.69	8.79	3.9	"	
55559	"	J. H. Ritchie	"	13.05	8.75	4.3	"	
55560	"	F. X. Bordo	"	12.57	8.77	3.8	"	
55561	"	O. Mungeon & Son	"	13.03	8.73	4.3	"	
55562	"	Wm. McGrath	"	.....	.....	7.	"	Top milk
55563	"	J. Roland	"	13.31	9.11	4.2	"	
55564	"	E. O. Reynolds	"	12.09	8.69	3.4	"	
55565	"	Thomas Ryan	"	11.84	8.54	3.3	"	
55566	"	Wm. Suckstorff	"	12.68	8.68	4.0	"	
55602	"	H. H. Wheeler	"	12.81	8.81	4.0	"	
55567	"	River View Farm	"	.....	.....	48.	"	Cream
55591	"	R. A. Warner	St. Albans	13.05	8.85	4.2	"	
55592	"	E. A. Brooks	"	12.81	8.81	4.0	"	
55593	"	W. S. Clark	"	12.57	8.77	3.8	"	
55595	"	F. O. Jackson	"	14.01	8.81	5.2	"	
55597	"	Z. W. Campbell	"	13.08	9.28	3.8	"	
55685	3- 4-08	G. R. Lawrence	Montpelier	13.66	8.96	4.7	"	
55686	"	W. H. Lombard	"	13.18	8.88	4.3	"	
55687	"	F R. Hayden	"	12.68	8.68	4.0	"	
55682	"	Montpelier Creamery	"	13.18	8.88	4.3	"	
55689	"	" "	"	13.64	8.84	4.8	"	
55690	"	Bingham Marvin	"	12.68	8.57	4.1	"	
55691	"	Geo. Campbell	"	13.28	8.68	4.6	"	
55692	"	W. D. Walker	"	13.42	8.92	4 5	"	
55693	"	J. M. Coats	"	13.54	8.94	4.6	"	
55694	"	R Brunelle	"	12.32	8.52	3.8	"	
55695	"	A. E. Niles	"	14.02	9.32	4.7	"	
55696	"	" "	"	13.54	9.04	4.5	"	
55697	"	N. N. Harris	"	13.42	9.02	4.4	"	
55698	"	D. F. Sallies	"	13.30	8.90	4.4	"	
55799	3- 9-08	A. G. Cardiner	Barre	12.80	8.60	4.2	"	

Digitized by Google

MILK ABOVE STANDARD EXAMINED FROM FEBRUARY 10, 1908, TO MAY 10, 1908 (Continued)

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
55800	3- 9-08	A. G. Cardiner.....	Barre	14.75	9.15	5.6	Normal	
55780	"	Norton.....	Colchester	12.82	9.00	3.8	"	
56004	3-13-08	Carroll Munn.....	Johnson	12.93	8.83	4.1	"	
56005	"	Homer W Peck.....	"	13.76	8.76	5.0	"	
56006	"	Morris Hill	"	12.32	8.52	3.8	"	
56119	3-17-08	C. L. Hudson.....	Bennington	.....	.....	18.2	"	Cream
56120	"	T. J. Redmond	Williston	.....	.....	24.0	"	"
56341	3-25-08	F. G. Norton.....	Essex Junction	12.68	8.68	4.0	"	
56367	3-26-08	C. M. Bell.....	St. Albans	14.01	8.81	5.2	"	
56368	"	Ploof.....	"	12.94	9.04	3.9	"	
56369	"	Z. N. Campbell.....	"	15.23	9.23	6.0	"	
56370	"	F. O. Jackson.....	"	13.30	8.70	4.4	"	
56371	"	J. N. Warner	"	12.81	8.81	4.0	"	
56372	"	Sweeney Grocery...	"	14.60	8.80	5.8	"	
56498	4- 1-08	W. Spear.....	Proctor	13.40	8.80	4.6	"	
56504	"	E. Myatt.....	"	13.05	8.85	4.2	"	
56505	"	R. C. Mead Estate ...	"	12.30	8.50	3.8	"	
56506	"	C. Ladabouche.....	"	12.21	8.71	3.5	"	
56844	4- 8-08	E. T. Brown.....	Montgomery	14.51	9.31	5.2	"	
57441	4-22-08	H. A. Bixby	Burlington	13.30	8.90	4.4	"	
57442	"	C. C. Bliss.....	"	12.80	8.60	4.2	"	
57443	"	I. H. Buck	"	13.78	8.98	4.8	"	
57444	"	Baker & Tupper.....	"	13.06	9.06	4.0	"	
57445	"	C. K. Tyler.	"	13.55	9.15	4.4	"	
57446	"	River View Farm....	"	13.06	9.06	4.0	"	
57447	"	D. J. Millham.....	"	13.28	8.68	4.6	"	
57448	"	Steele & Butler.....	"	12.80	8.60	4.2	"	
57449	"	H.B.Chittenden & Son	"	13.05	8.85	4.2	"	
57450	"	L. E. Haynes & Son..	"	13.54	8.94	4.6	"	
57451	"	E. O. Reynolds.....	"	12.68	8.68	4.0	"	
57452	"	I. E. Chase.....	"	13.04	8.68	4.4	"	
57453	"	O. E. Barber.....	"	12.32	8.52	3.8	"	
57454	"	H. H. Wheeler.....	"	13.31	9.11	4.2	"	
57455	"	J. B. Ritchie.....	"	12.81	8.91	3.9	"	
57456	"	Thomas Ryan.....	"	12.80	8.60	4.2	"	
57457	"	J. E. Maynard.....	"	13.05	8.85	4.2	"	
57458	"	Wm. Suckstorff	"	13.76	8.76	5.0	"	
57459	"	Wm. McGrath.....	"	13.18	8.88	4.3	"	
57460	"	F. L. Murray	"	12.68	8.68	4.0	"	
57461	"	Peter Bushy.....	"	13.40	8.70	4.7	"	
57462	"	F. X. Saltus.....	"	12.56	8.56	4.0	"	
57463	"	J. G. G. Downing.....	"	12.46	8.96	3.5	"	
57464	"	T. P. Welch.....	"	13.16	8.66	4.5	"	
57465	"	E. J. Viens.....	"	13.42	8.92	4.5	"	
57466	"	E. C. Bordo.....	"	12.80	8.90	4.1	"	
57467	"	D. Bourne.....	"	12.97	8.67	4.3	"	
57495	"	A. S. Hays.....	"	12.56	8.56	4.0	"	
57505	"	J. G. G. Downing.....	"	13.54	8.94	4.6	"	
57504	"	" "	"	13.42	9.02	4.4	"	
57603	4-25-08	W. R. Prime	"	.....	.....	.8		Buttermilk
57754	4-30-08	F. C. Russell.....	Proctor	12.20	8.50	3.6	Normal	
57755	"	J. Stone.....	"	11.85	8.55	3.3	"	
57756	"	Wm. Fox	"	11.97	8.67	3.3	"	
57757	"	C. Dodge	"	12.81	8.81	4.0	"	
57758	"	R. J. Bruce.....	"	12.70	8.50	4.2	"	
57759	"	E. Myatt.....	"	12.20	8.50	3.7	"	
57760	"	R. C. Mead Estate....	"	12.56	8.56	4.0	"	
57761	"	J. Kraus.....	"	12.20	8.50	3.7	"	
57762	"	C. Ladabouche	"	12.82	8.52	4.3	"	
57763	"	T. V. Bates.....	"	12.63	8.53	4.1	"	
57764	"	J. Turner.....	"	12.10	8.60	3.5	"	
57765	"	B. Hier.....	"	12.10	8.50	3.6	"	
57813	5- 1-08	Sweeney Grocery Co.	St. Albans	.....	.....	40.0	"	Cream
57814	"	" " "	"	.....	.....	38.0	"	"

Digitized by Google

MILK ABOVE STANDARD EXAMINED FROM FEBRUARY 10, 1908, TO MAY 10, 1908 (Continued)

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
57815	5- 1-08	R. B. Davis....	St. Albans	13.05	8.85	4.2	Normal	
57816	"	C. M. Bell.....	"	13.42	8.92	4.5	"	
57817	"	Ploof	"	12.21	8.71	3.5	"	
57818	"	R. C. Warner.....	"	12.45	8.75	3.7	"	
57819	"	J. N. Warner.....	"	.....	.....	8.2	"	Top milk
57820	"	Z. W. Campbell	"	13.18	8.88	4.3	"	
57990	5- 8-08	D. N. Ellis.....	Fair Haven	12.32	8.52	3.8	"	
57991	"	I. A. Wood.....	"	12.92	8.62	4.3	"	
57992	"	L. D. Allen.....	"	12.08	8.50	3.6	"	
57993	"	F. J. Norton	"	13.18	9.08	4.1	"	
57994	"	W. H. Streeter	"	14.74	8.54	5.8	"	
57995	"	Peter Wood.....	"	13.30	8.90	4.4	"	
57996	"	H. G. Ballard.....	Poultney	13.05	8.85	4.2	"	
57998	"	Jos. St. Mary	"	11.84	8.54	3.3	"	
57999	"	Frank Briggs	"	12.10	8.50	3.6	"	
58000	"	C. C. Loomis.....	"	.....	.....	7.4	"	Top milk
58001	"	John P. Mullin.....	"	13.18	8.58	4.3	"	
58050	"	J. Hathorn.....	Woodstock	.....	.....	6.4	"	Top milk
58051	"	G. Lockwood.....	"	14.01	8.81	5.2	"	"
58084	5- 9-08	F. J. Croto.....	Williston	.....	.....	36.	"	Cream submitted

Total 148

MILK BELOW STANDARD EXAMINED FROM FEBRUARY 10, 1908, TO MAY 10, 1908

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
55590	3-29-08	J. W. Warner.....	St Albans	14.37	8.37	5.5	Normal	Dirty
55594	"	Sweeney Grocery Co.	"	14.98	8.98	6.0	"	"
55596	"	" "	"	.....	.....	40.0	"	"
56378	3-26-08	" "	"	.....	....	36.0	"	"
56453	3-30-08	H.B.Chittenden & Son	Burlington	.....	.....	....	Pus and red blood cells	Submitted
56455	"	P. E. McSweeney.....	"	.....	.....	....	Pus and red blood cells	"
56497	3-31-08	B. Hier.....	Proctor	.....	.....	....	.....	Dirty
56499	"	F. C. Russell.....	"	.....	.....	....	.....	"
56500	"	J. B. Turner	"	.....	.....	....	.....	"
56501	"	J. Kraus	"	.....	.....	....	.....	"
56502	"	J. Stone.....	"	.....	.....	....	.....	"
56508	"	R. J. Bruce	"	.....	.....	....	.....	"
57997	5- 8-08	H. G. Ballard	Poultney	11.95	8.35	3.6	Normal	" low in solids not fat

Total, 18.

Digitized by Google

Laboratory No.	Article	Dealer	Manufacturer or Wholesaler	Vermont Food and Drug Law: Legal	Vermont Food and Drug Law: Illegal	Remarks
54996	Cheese	Grange Store, Brattleboro	W. E. Aldrich, Mt. Holly	1		Milk fat 57.31
54995	"	F. C. Clark, "	Abbott Gray Co	1		" 56.93
54993	"	F. Scott, "		1		" 57.80
54994	"	R. H. Amidon, "	W. E. Aldrich, Mt. Holly	1		" 57.13
54992	"	H. S. Goodenough, "	Holbrook Grocery Co., Keene, N. H.	1		" 54.99
54997	Tapioca, Pearl	R. H. Amidon, "		1		
54998	Minute Tapioca	" "		1		
55203	Brandy Drops	Submitted by R. A. Lawrence, Rutland			1	
55349	Barrington Hall Coffee	F. Scott, Brattleboro	Baker & Co., New York	1		
55808	Butter	Submitted by E. G. Ashey, Burlington	N. L. Ring, Huntington	1		
54335	Veal Loaf	G. E. L. Badlam, Rutland	Armour Packing Co., Kansas City	1		
54334	Corned Beef	" " "	" " "	1		
54339	Ham Loaf	" " "	" " "	1		
54336	Vienna Sausage	" " "	Libby, McNeil & Libby, Chicago		1	Preserved with boric compound;
54337	Boneless Chicken	" " "	" " "	1		[large amount starchy material
54338	Deviled Ham	" " "	Underwood & Co., Boston	1		
54340	Corned Beef	Fred W. Stafford, "	Schwarzchild & Sulzberger Co	1		
54339	Rex Deviled Ham	" "	Cudahy Canning Co	1		
54353	Lamb's Tongue	A. D. Tossing, "	Armour & Co., Kansas City	1		
54311	Richelieu Boneless Chicken	Geo. A. Bucklin, "	Sprague, Warner & Co., Chicago	1		
54315	Richelieu Sliced Bacon	" "	" " "	1		
55517	Butter	Harry H. Rosenberg, Burlington		1		
55651	Canned Peas	Submitted by C. W. Cross, "			1	Acid in reaction; fermenting
54351	Pepper	H. C. Durkee & Co., Rutland	Bacon, Stickney & Co., Albany, N. Y.	1		
54357	"	A. D. Tossing, "	W. C. Staley, Troy, N. Y.	1		
54343	" Superlative Brand	Fred W. Stafford, "	Fred W. Stafford, Rutland		1	Weighs less than ¼ pound
54312	" Richelieu Brand	Geo. A. Bucklin, "	Sprague, Warner & Co., Chicago	1		
51194	"	W. W. Morton, Randolph	Stickney & Poor, Boston	1		
51129	" Golden Horn	W. F. Edson, "	Francis H. Leggett & Co., New York	1		
51100	"	Sprague & Sprague, E. Randolph	Berry, Dodge & Co., Newburyport, Mass.	1		
51108	Cassia	" " " "	"		1	Weighs less than ¼ pound
51133	Cinnamon	W. F. Edson, Randolph	Francis H. Leggett & Co., New York	1		
54344	" Superlative Brand	Fred W. Stafford, Rutland	Fred W. Stafford, Rutland	1		
51125	"	W. W. Morton, Randolph	Stickney & Poor, Boston		1	Weighs less than ¼ pound
54355	"	A. D. Tossing, Rutland	W. C. Staley, Troy, N. Y.		1	" " " " "
54318	Cloves, Richelieu Brand	Geo. A. Bucklin, "	Sprague, Warner & Co., Chicago	1		
54342	" Superlative Brand	Fred W. Stafford "	Fred W. Stafford, Rutland	1		
54329	" Nabob Brand	G. E. L. Badlam "	Francis H. Leggett & Co., New York		1	Weighs less than ¼ pound

Digitized by Google

Foods (Continued)

Laboratory No.	Article	Dealer	Manufacturer or Wholesaler	Vermont Food and Drug Law: Legal	Vermont Food and Drug Law: Illegal	Remarks
54354	Cloves	A. D. Tossing, Rutland	W. C. Staley, Troy, N. Y.	.....	1	Adulterated with clove stems
51102	"	Sprague & Sprague, E. Randolph	Berry, Dodge & Co., Newburyport, Mass.	.....	1	" " " "
51131	" Golden Horn	W. F. Edson, Randolph	Francis H Leggett & Co., New York	1	.....	
51130	Mustard	" " "	" " "	1	.....	
54327	" Premier Brand	G. E. L. Badlam, Rutland	" " "	1	.....	
54325	" Richelieu Brand	Geo. A. Bucklin, "	Sprague, Warner & Co., Chicago	1	.....	
54546	" Superlative Brand	Fred W. Stafford, "	Fred W. Stafford, Rutland	1	.....	
54345	Ginger, " "	" "	" "	1	.....	
51101	"	Sprague & Sprague, E. Randolph	Berry, Dodge & Co., Newburyport, Mass.	1	.....	
51123	"	W. W. Morton, Randolph	Stickney & Poor, Boston	1	.....	
51133	Nutmeg (ground)	W. F. Edson, "	" "	1	.....	
54348	Extract Vanilla	Fred W. Stafford, Rutland	Fred W. Stafford, Rutland	1	.....	Vanillin .15 per cent
51451	" "	E. J. Preston, Fair Haven	W. C. Brate, Albany, N. Y.	1	.....	" .20 "
54330	" "	G. E. L. Badlam, Rutland	Francis H. Leggett & Co., New York	1	.....	" .225 "
54321	" "	Geo. A. Bucklin, "	Sprague, Warner & Co., Chicago	1	.....	" .20 "
54352	" "	H. C. Durkee, "	Saratoga Ext. & Chem. Co., Saratoga, N. Y.	.....	1	Artificial
54349	" "	" "	Van Dusen Extract Co., New York	1	.....	Vanillin .075 per cent
54267	" "	McClellan & Farmer, Rutland		1	.....	" .05 "
55881	" " Globe	L. B. Brooks, Montpelier	Potter & Wrightington, Boston	.....	1	Contains coumarin
54323	Extract Lemon	Geo. A. Bucklin, Rutland	Sprague, Warner & Co., Chicago	1	.....	Lemon oil 7.37 per cent
54331	" " Nabob	G. E. L. Badlam, "	Francis H. Leggett & Co., New York	.....	1	" 2.40 "
54332	" "	" "		.....	1	" 1.47 "
54347	" "	Fred W. Stafford, "	Fred W. Stafford, Rutland	.....	1	" .25 "
54452	" "	E. J. Preston, "	W. C. Brate, Albany, N. Y.	.....	1	" .16 "
55876	" "	L. B. Brooks, Montpelier	Schlotterbeck & Foss, Portland, Me.	1	.....	" 8.47 "
55912	" "	Marvin & Sherburne, Montpelier	" "	.....	1	" 6.32 per cent; colored
55872	" "	Chapman Bros., "	E. Hartshorn & Sons, Boston	1	.....	" 8.60 "
55877	" " Globe	L. B. Brooks, "	Potter & Wrightington, "	.....	1	" 7.32 " "
55878	" "	" "	Saratoga Extract & Chemical Co., Saratoga Springs, N. Y.	.....	1	" 0.71 " "
55898	" "	Kellogg & Jerome, "	Lester H. Greene, Montpelier	.....	1	" 3.10 "
55875	" "	L. B. Brooks, "	Baker Extract Co., Springfield, Mass.	1	.....	" 7.53 "
55453	" Wintergreen	E. J. Preston, Fair Haven	W. C. Brate, Albany, N. Y.	.....	1	Misbranded
54314	" Orange	Geo. A. Bucklin & Co., Rutland	C. L. Cotton Perfume & Extract Co., Earlville, N. Y.	.....	1	Orange oil 1 per cent
4322	" Cinnamon	" "	Sprague, Warner & Co., Chicago	1	.....	
54350	" Peppermint	H. C. Durkee & Co., "	E. Hartshorn & Sons, Boston	1	.....	
54319	Richelieu Chili Sauce	Geo. A. Bucklin & Co., "	Sprague, Warner & Co., Chicago	1	.....	No preservative

Digitized by Google

Laboratory No.	Article	Dealer	Manufacturer or Wholesaler	Vermont Food and Drug Law		Remarks
				Legal	Illegal	
54309	Richelieu Tomato Catsup	Geo. A. Bucklin & Co., Rutland	Sprague, Warner & Co., Chicago	1		No preservative
55993	Columbia Catsup	Berry & Jones, Montpelier	Columbia Conserve Co., Indianapolis, Ind.	1		" "
55992	Olive Oil	Kellogg & Jerome, "	S. S. Pierce & Co., Chicago	1		
55883	"	L. B. Brooks, "	James Plagniol	1		
55884	"	" "	H. J. Heinz Co., Pittsburg	1		
55875	"		I. Bonechi, Livorno, Italy	1		
55894	De-Tan-Ated Coffee	Kellogg & Jerome, Montpelier	Clark, Coggin & Johnson, Boston		1	Misbranded
55917	Mocha and Java Coffee	Marvin & Sherburne, "	Webster Thomas Co., "		1	"
55885	Cider Vinegar	Callahan & Booth, "		1		
54366	" "	G. E. L. Badlam, Rutland		1		
54365	" "	H. C. Durkee, "		1		
55909	" "	Marvin & Sherburne, Montpelier		1		
55878	" "	Chapman Bros., "		1		
55868	" "	Edward Gill, "		1		
56080	" "	F. E. Perkins, "	Burlington Grocery Co., Burlington	1		
56081	" "	E. A. Croker, "	Spaulding Kimball Co., "	1		
54320	Strawberry Jam	Geo. A. Bucklin & Co., Rutland	Sprague, Warner & Co., Chicago	1		
54316	Preserves	" "	" "	1		
54308	Guava Jelly	" "	" "	1		
54317	Red Currant Jelly	" "	" "	1		
56493	Maple Sugar	C. L. Clark, Brattleboro	J. E. Howe, Brattleboro	1		
56494	" "	" "	C. Dalrymple, "	1		
56495	" "	F. L. Clark, "	M. Mills, "	1		
56536	" "	J. G. G. Downing, Burlington		1		
56537	" "	" "		1		
56776	" Syrup	C. H. Macy, Hartford	C. S. Holt, Hartford	1		
56778	" "	Edson & Chadwick, Hartford	Glenn Lyman, Hartford	1		
56779	" "	C. E. Billings, "	Eugene Boyd, "	1		
56986	" Sugar	Prouty & Hurlbut, Swanton	M. B. Hooker, Fletcher	1		
56929	" "	Warner & Towne, "	M. McClure, Highgate	1		
57045	" Syrup	Wallace Green, Waterbury	Ira Pike, Waterbury	1		
57046	" "	Griffin & Wheeler, "	D. E. Phillips, Waterbury	1		
57047	" "	F. C. Lamb, "	M. O. Dorr, "	1		
57048	" "	O'Neil Bros., "	Bert Atherton, "	1		
57049	" Sugar	F. C. Lamb, "	Peter De Forge, "	1		
57050	" "	F. E. Atkins, "	Miles & McMahon, Stowe	1		
57051	" "	Wallace Green, "	Ira Pike, Waterbnry	1		

Digitized by Google

Foods (Continued)

Laboratory No.	Article	Dealer	Manufacturer or Wholesaler	Vermont Food and Drug Law		Remarks
				Legal	Illegal	
57052	Maple Sugar	Griffin & Wheeler, Waterbury	L. S. Hill, Waterbury	1		
57053	" Syrup	F. E. Atkins, "	E. O. Downing, Waterbury	1		
57105	" Sugar	Merritt & Pease, St. Albans		1		
57155	" Syrup	J. W. Rivers, Morrisville	Guy Campbell, Morristown	1		
57156	" "	James Hill, "	C. M. Turney, "	1		
57157	" "	J. W. Rivers, "	A. B. Hollis, "	1		
57191	" "	H. Waite, "	R. Caswell, "	1		
57193	" Sugar	H. P. Munson "	G. Wolcott, "	1		
57194	" "	J. W. Rivers "	J. Wakefield, "	1		
57195	" "	E. W. Gates "	I. Chamberlain, "	1		
57261	" "	Farm Store, Bradford	E. H. Toxby, Bradford	1		
57262	" "	Burhard & Hay, "	Wm. Merritt, "	1		
57263	" "	Clark, Mucardele Co., Bradford	F. J. Evloe, "	1		
57277	" "	C. D. Polly, Bellows Falls	W. D. Friend, Rockingham	1		
57278	" "	Clark & Durkee, "	C. E. Ball, "	1		
57279	" "	Keene Coop. Grocery Co., Bellows Falls	John Jacobs, "	1		
57280	" Syrup	" "	Chester Hadwin, "	1		
57281	" "	" "	I. F. McQuaid, "	1		
57282	" "	S. J. Cray, "		1		
57283	" "	F. B. F. Grocery Co., "	P. L. Sweeney "	1		
57284	" "	Gould & Marble, "	C. C. Gould, "	1		
57285	" "	F. J. Hall & Son, "	S. F. Oaks, "	1		
57302	" "	C. B. Yandow, Essex Junction	Frank Austin, Essex	1		
57300	" "	E. L. Keith, "	Addison Isham, "	1		
57297	" Sugar	R. A. Mudgett, "	Chas. Bellows, "	1		
57296	" "	J. A. Gilbert, "	S. J. Church, "	1		
56927	" "	Warner & Towne, Swanton	Geo. Burnham, "	1		
56930	" "	Prouty & Hurlburd, "		1		
56761	" "	F. B. Barrett, Poultney	E. S. Marshall, Poultney	1		
56756	" Syrup	N. B. Canay, "	Chas. Russell, "	1		
56707	" Sugar	C. L. Clifford, Brandon	Joseph Hooker, Brandon	1		
56706	" "	Fuller & Shambo, Brandon	D. W. Prim, "	1		
56704	" "	C. L. Clifford, "	W. J. Sawyer, "	1		
56703	" "	" "	W. Dudley, "	1		
56702	" "	Fuller & Shambo, "	Rollin Rood, "	1		
56705	" "	Collins & Needham "	Fred Capen, "	1		
56711	" Syrup	C. L. Clifford "	Dan Kilborn, "	1		
56680	Maple Sugar	B. D. Brown, Springfield	C. E. Sawyer, Springfield	1		

Digitized by Google

Laboratory No.	Article	Dealer	Manufacturer or Wholesaler	Vermont Food and Drug Law		Remarks
				Legal	Illegal	
56681	Maple Sugar	The Lelands, Springfield	B. W. Coburn, Springfield	1		
56684	" "	Sterns Bros., "	W. E. Hadwin, "	1		
56686	" Syrup	Aseltine & Greenwood, Enosburgh Falls	S. B. Whitney, Enosburgh Falls	1		
56687	" "	N. H. Bellade, Enosburgh Falls	Norman Gibson, " "	1		
56688	" "	" " " "	E. E. Baird, " "	1		
56689	" "	M. P. Perley " "	C. H. Welch, " "	1		
56690	" Sugar	MacDermaid & Co., Newport	Wm. Lawson, Newport	1		
56691	" "	Joseph Gendeon "	Edward Gresline, "	1		
56694	" "	True & Blanchard, "	A. A. Patten, "	1		
56695	" Syrup	E. Lane & Son, "	A. E. Sleeper, "	1		
56924	" "	W. W. Calder, Barre		1		
56591	" Sugar	Stone, Tracy Co., Windsor		1		
56560	" "	Raine & Bent, Burlington		1		
56682	" Syrup	Stearns Bros., Springfield	Charles Damon, Springfield	1		
56683	" "	The Lelands, "	J. Beals, "	1		
56626	" Sugar	A. D. Tossing, Rutland	B. Harkinson, Rutland	1		
56627	" "	Parkhurst Store, "	Stafford, "	1		
56628	" "	" " "	Holden, "	1		
56602	" "	N. Petios, "		1		
56603	" "	Rutland Fruit Co., "	Everest, Rutland	1		
56632	" "	Combination Store, Rutland	H. N. Taylor, Rutland	1		
56692	" "	E. Lane & Son, Newport	E. Lane & Son, Newport	1		
56693	" "	Lane & Dwinell "	Frank Gay, "	1		
56696	" Syrup	MacDermaid & Co., "	Samuel D. Lenin, "	1		
56697	" "	Joseph Gendeon, Newport	T. Petite, "	1		
56698	" "	Lane & Dwinell, "	O. J. Moffield, "	1		
56699	" "	True & Blanchard "	" "	1		
56700	" "	Newport Grocery Co., "	Edw. Grasuline, "	1		
56701	" "	C. H. Loveland & Co., "	R. E. Brown, "	1		
56713	" Sugar	I. E. Stewart, Bristol	Byron Hulburt, Bristol	1		
56714	" "	Odell Estes, "	Ed. Turner, "	1		
56715	" "	B. C. Sargent, "	Dan Sargent "	1		
56716	" "	W. H. Cordell & Co., Bristol	J. E. Hewett, "	1		
56717	" "	E. C. Dike & Co., "	J. L. Fayette, "	1		
56718	" Syrup	J. E. Stewart, "	Archie Gladding, "	1		
56719	" "	B. C. Sargent, "	B. C. Sargent, "	1		
56721	" "	S. D. Farr, "	Walter Young, "	1		

Digitized by Google

Foods (Continued)

Laboratory No.	Article	Dealer	Manufacturer or Wholesaler	Vermont Food and Drug Law		Remarks
				Legal	Illegal	
56525	Maple Sugar	Victor Roceiot, Swanton	Geo. Ferland, Highgate	1		
56528	" "	Warner & Towne, "	F. Hubbard, Swanton	1		
56757	" Syrup	H. D. Scott, Poultney	E. S. Marshall, Poultney	1		
56758	" "	Robert Williams, Poultney	F. B. Gray, "	1		
56759	" "	James Flaherty, "	Crosby, "	1		
56760	" "	F. B. Barrett, "	R. H. Landry, "	1		
56763	" "	Hards' Drug Store, Manchester	Gilbert Chisbensen, Manchester	1		
56764	" Sugar	C. A. Hard, "	Chas. Randall, "	1		
56774	" "	C. S. Wilson, Hartford	A. E. Sherburne, Hartford	1		
56777	" Syrup	A. Brouillette, "	C. C. Warren, Pomfret	1		
56538	" Sugar	D. Bourne, Burlington	J. Lewis, Westford	1		
56539	" "	J. G. G. Downing, "	Hardy, Burlington	1		
56540	" Syrup	F. E. Meigs, "		1		
56541	" "	C. H. Ellis, "	R. H. & F. J. Mitchell, Underhill	1		
56542	" "	P. D. Kelley, "		1		
56543	" "	E. S. Spear, "	R. White, Underhill	1		
56544	" "	C. H. Ellis, "	C. H. Ellis, Burlington	1		
56545	" "	C. A. Barber, "	C. F. Gove, Charlotte	1		
56546	" "	E. J. Thomas & Co., Burlington		1		
56547	" "	P. H. Corley & Son, "		1		
56548	" "	Raine & Burt, "	L. E. Quinlan, Jericho	1		
56549	" "	F. E. Perkins, "	J. Hazard, Charlotte	1		
56550	" "	" " "	H. H. Hardy, Jericho	1		
56551	" "	E. A. Croker, "	Wesley Powell, Charlotte	1		
57552	" Sugar	C. H. Ellis, "	J. M. Beeman, Fairfield	1		
56553	" "	F. E. Perkins, "	G. H. Brush, Sheldon	1		
56554	" "	F. E. Meigs, "		1		
56556	" "	C. A. Barber, "	Jessie Carpenter, Cambridge	1		
56557	" "	P. D. Kelley, "		1		
56558	" "	Burlington Fruit Co., "	A. H. Brown, Jeffersonville	1		
56559	" "	C. A. Barber, "	Chas. Bellows, Cambridge	1		
56561	" "	Raine & Burt, "		1		
56562	" "	Dolan Bros., "	C. A. Davis, Jeffersonville	1		
56563	" "	F. E. Perkins, "	A. J. Brown, "	1		
56590	" Syrup	Stone, Tracy Co., Windsor		1		
56592	" Sugar	Farmer & Marcot "	Edson Pearce, Windsor	1		
56593	" "	E. B. Patterson, Bennington	F. G. Kimball, So. Berlin, N. Y	1		
56595	" Syrup	P. C. Cornell, "	Hugh Michaels, Bennington	1		

Digitized by Google

Laboratory No.	Article	Dealer	Manufacturer or Wholesaler	Vermont Food and Drug Law		Remarks
				Legal	Illegal	
56596	Maple Syrup	J. H. Livingston, Bennington	L. H. Potter, Bennington	1		
56597	" "	E. E. Bottum, "	Henry Thompson, "	1		
56598	" "	E. B. Patterson, "	J. Congdon, No. Dorset	1		
56599	" "	T. F. Morrissey, "	Herbert Shalton	1		
56600	" "	P. C. Cornell, "	C. Amidon	1		
56601	" Sugar	F. Fucicoli, Rutland		1		
56604	" "	G. A. Bucklin & Co, Rutland	Ed. Leonard, Rutland	1		
56605	" "	H. E. Seward & Son, "	" " "	1		
56606	" "	F. W. Stafford, "	" " "	1		
56620	" Syrup	Combination Store, "	D. P. Collins, "	1		
56621	" "	F. W. Stafford, "	C. E. Crampton, "	1		
56623	" "	A. D. Tossing, "	Chas. Leonard, "	1		
56633	" "	G. A. Bucklin & Co., "	Balsh, "	1		
56634	" "	H. E. Severance, "		1		
56635	" "	Parkhurst Store, "	R. Moore	1		
56564	" Sugar	F. E. Perkins, Burlington		1		
56589	" Syrup	Farmer & Marcot, Windsor	Clayton Smith, Windsor	1		
56634	" "	R. H. Amidon, Brattleboro	R. B. Thomas, Brattleboro	1		
56635	" Sugar	" " "	L. J. Johnson, "	1		
56636	" "	" " "	Mrs. J. A. Clark, "	1		
56637	" "	" " "	W. A. Franklin, "	1		
56709	" Syrup	C. L. Clifford, Brandon	C. M. Winslow, Brandon	1		
56708	" "	Collins & Needham, Brandon	Fred Capen, "	1		
56710	" "	C. L. Clifford "	O. N. Chase, "	1		
57158	" "	L. B. Boynton, Morrisville	Samuel Patch, Morrisville	1		
57154	" "	C. B. Vincent, "	N. I. Kellogg, "	1		
57159	" "	H. Waite, "	H. S. Mathews, "	1		
57190	" "	H. P. Munson, "	John Clark, "	1		
57192	" Sugar	H. Waite, "	L. Lamphere, "	1		
56762	" Syrup	C. C. Bell, Manchester	Bert Bardy, Manchester	1		
56712	" Sugar	S. D. Farr, Bristol	M. A. Young & Son, Bristol	1		
56720	" Syrup	E. C. Dyke & Co., Bristol	Artie Hill, "	1		
57264	" Sugar	E. H. Nye, Bradford	Wm. Coburn, Bradford	1		
56777	" Syrup	F. M. Greenough, Hartford	W. O. Stetson, Hartford	1		
57301	" "	Geo. McNane, Essex Junction	Geo. McNane, Essex Junction	1		
57308	" Sugar	Fletcher Bros., "	Geo. Hawley, "	1		
57299	" "	E. L. Keith, "	E. C. Gew, "	1		
57524	" Syrup	Oliver Preston, Fair Haven	Silas Giddings, Fair Haven	1		

Digitized by Google

Foods (Continued)

Laboratory No.	Article	Dealer	Manufacturer or Wholesaler	Vermont Food and Drug Law		Remarks
				Legal	Illegal	
57525	Maple Syrup	L. H. Shepard, Fair Haven	A. A. Clemens, Fair Haven	1		
57526	" "	John Foley, "	E. R. Jennings, "	1		
57527	" Sugar	Oliver Preston, "	Andrew Hulett, "	1		
57528	" "	John Foley, "	E. J. Jennings, "	1		
57529	" "	L. H. Shepard, "	L. V. Crosby, "	1		
57507	" Syrup	Fred L. Smith, Brandon	John Wilbur, Brandon	1		
57508	" "	" " "	Frank C. Ayers, "	1		
57509	" Sugar	Collins & Needham, Brandon	Clarence Martin, Rochester	1		
57511	" "	Fred L. Smith, "	Frank C. Ayers, St. Albans	1		
57101	" "	J. W. Ryan, St. Albans		1		
57102	" "	Palmer & Torrance, St. Albans	Wm. Gaynor, St. Albans	1		
57103	" "	Dorsey Taylor, "		1		
57104	" "	F. W. Hyde, "		1		
57562	" Syrup	G. C. Storey, "		1		
57563	" "	W. T. Merritt, "		1		
57564	" "	F. W. Hyde, "	Marlow Prindle, St. Albans	1		
57565	" "	J. W. Ryan, "		1		
57566	" "	H. W. Denning, "		1		
57566	" "	Dorsey Taylor, "		1		
57567	" "	Chas. Trudeau, "		1		
57568	" "	E. P. & W. H. Stevens, "	T. R. Waugh, St. Albans	1		
57570	" Sugar	H. W. Denning, "	C. H. Howard, "	1		
57571	" "	E. P. & W. H. Stevens, "	Mrs. Fred Bliss, "	1		
57580	" Syrup	Smith & Cummings, Barre	Fred Sagto, Barre	1		
57531	" "	Sonden & Lyon, "	L. D. Gale, "	1		
57532	" "	Eastman Bros., "	W. J. Perry, "	1		
57533	" "	L. B. Dodge, "	Geo. K. Sprague, Brookfield	1		
57534	" Sugar	" " "	Don Camp, Barre	1		
57535	" "	Eastman Bros., "	W. J. Perry, "	1		
57536	" "	Sonden & Lyon, "	B. Bassett, "	1		
57537	" "	" " "	Ira B. Wright, "	1		
57411	" "	G. B. Constantine, Hardwick	Wm. Strong, Hardwick	1		
57410	" "	Harvey Libby, "	H. W. Calderwood, East Craftsbury	1		
57409	" "	W. E. Clement, "	T. S. Farrand, Hardwick	1		
57408	" Syrup	J. H. McLoud Co., "	W. H. Danforth, "	1		
57407	" "	W. E. Clement, "	S. J. Norris & Co., Cabot	1		
57406	" "	Harvey Libby, "	H. W. Calderwood, East Craftsbury	1		
56629	" Sugar	Parkhurst Store, Rutland	R. Moore, Rutland		1	

Digitized by Google

Foods (Continued)

Laboratory No.	Article	Dealer	Manufacturer or Wholesaler	Vermont Food and Drug Law		Remarks
				Legal	Illegal	
56555	Maple Sugar	E. S. Spear, Burlington			1	
56594	Cheese	W. A. Sanborn, So. Royalton		1		Submitted
57274	Lemon Extract	W. C. Brate, Albany, N. Y.	W. C. Brate, Albany, N. Y.		1	"
57368	Prepared Wheat	C. E. Bliss, Montpelier		1		"
56213	Butterine	Mrs. M. E. Mossey, Burlington		1		"
57730	Blueberries	St. Johnsbury Grocery Co.	E. T. Conway & Co., Boston	1		"
57717	Vanilla Extract	Burlington Grocery Co.	Burlington Grocery Co., Burlington		1	" contains coumarin
54328	Nabob Mince Meat	G. E. L. Badlam, Rutland	Francis H. Leggett, New York		1	Preserved with boric
55865	Duffy's Cider	Edward Gill, Montpelier	American Fruit Product Co., Rochester N. Y.	1		
55916	Corned Beef Hash	Marvin & Sherburne, Montpelier	Libby, McNeil & Libby, Chicago	1		
55886	Vienna Sausage	Callahan & Booth, "	Armour & Co., "		1	Preserved with boric
55887	Rex Vienna Sausage	" " "	Cudahy Canning Co., Kansas City	1		
55871	Cottage Loaf	Chapman Bros., "	Libby, McNeil & Libby, Chicago	1		
57510	Maple Sugar	Fred L. Smith, Brandon	Frank Seymour, Brandon	1		
57509	" "	Collins & Needham, Brandon	Clarence Martin, Rochester	1		
57933	" "	F. E. Perkins, Burlington		1		
57918	" Syrup	Edward E. Sayers, W. Corinth		1		
58092	" "	George Coburn, Post Mills		1		
57912	" "	James B. Hall, Newbury	Stephen Johnson, Newbury	1		
57913	" Sugar	" " "	A. J. Tuxbury	1		
57915	" Syrup	E. L. Allen, Island Pond	Leroy Buck, Island Pond	1		
57916	" Sugar	Guest & Wilcox, Island Pond	Cargill Burroughs, "	1		
57917	" "	C. E. Willoughby, "	Joseph Scoville, "	1		
57919	" "	James Flaherty, Poultney	George Fenton, Poultney	1		
57753	" "	H. S. Stilson, Proctor		1		
57506	" Syrup	Collins & Needham, Brandon	Clarence Martin, Rochester		1	
Total				295	81	

Digitized by Google

Lab. No.	Article	Dealer	Manufacturer or Wholesaler	Vt. Food and Drug Law		Remarks
				Legal	Illegal	
54259	Fowler's Solution	Pratt & Levins, Rutland	Pratt & Levins, Rutland	1	.....	
54361	" "	F. M. Barrett, Rutland	Polk, Calder & Co., Troy, N. Y.	.....	1	Contains 84 grs. As_2O_3 in 100 cc.
54290	" "	Higgins Drug Co., Rutland	Higgins Drug Co., Rutland	1	.....	
54286	" "	A. H. Abraham, Rutland	A. H. Abraham, Rutland	1	.....	
54249	" "	Charles W. Ward, Rutland	Charles W. Ward, Rutland	1	.....	
56159	Dr. Freeman's Corn Doctor	Submitted by A. C. Wheeler, Newp't	Freeman Pharmacal Co., Portland, Me.	1	.....	
59097	Rexall Baby Cough Syrup	J. W. O'Sullivan, Burlington	United Drug Co., Boston	1	.....	
47838	Tinct. Hyoscyamus	G. E. Greene & Co., Brattleboro	G. E. Greene & Co., Brattleboro	1	.....	
54264	Celero Headache Lozenge	McClallan & Farmer, Rutland	The Celero Drug Co., Boston	.....	1	Misbranded. Acetanilid 2 grs.
55933	McGrath's Headache Powders	Geo. E. McGrath, Montpelier	Geo. E. McGrath, Montpelier	1	.....	
54259	Barrett's Headache Powders	F. M. Barrett, Rutland	F. M. Barrett, Rutland	.....	1	Acetanilid 2 grs.
54258	Flag Salt	" " "	Flag Salt Remedy Co., Savannah, N. Y.	.....	1	" 4 grs.
54455	Green's Headache Powders	Green Bros., Fair Haven	Green Bros., Fair Haven	.....	1	" 3.9 to 4.9 grs.
54252	Im-ped-e-rine Headache Cure	Charles W. Ward, Rutland	Trudell Drug Co., Rutland	.....	1	" 2.1 grs.
54317	Im-ped-e-rine Headache Remedy	Trudell Drug Co., Rutland	" " "	.....	1	" 2.2 grs.
54287	Orangeine Powders	Higgins Drug Co., Rutland	Orangeine Chemical Co., Chicago	.....	1	" 2.7 grs
54286	Headache Powders	" " " "	Higgins Drug Co., Rutland	.....	1	" 4.1 grs.
54263	Flag Salt	McClallan & Farmer, Rutland	Flag Salt Remedy Co., Savannah, N. Y.	.....	1	Misbranded. Acetanilid 4 grs.
54251	Eureka Headache Cure	Charles W. Ward, Rutland	Eureka Headache Cure Co., Concord, N. H.	.....	1	Acetanilid 3.8 grs.
55939	Pool's Positive Headache Remedy	W. E. Pool, Montpelier	W. E. Pool, Montpelier	.....	1	Misbranded. Acetanilid 3.1 grs.
57739	Smith's Green Mountain Renovator	Burlington Drug Co., Burlington	St. Albans Remedy Co., St. Albans	.....	1	Misbranded. Alcohol 17 per cent
57731	Nature's Stomach Remedy	Nature Remedy Co., Burlington	A. J. Trudeo, Burlington	1	.....	
58547	Malt Nutrine	S. S. Pierce Co., Boston, Mass.	Anheuser-Busch Brewing Association	1	.....	
			Total	10	18	

Digitized by Google

MISCELLANEOUS MEATS

Laboratory No.	Material	Submitted by	Remarks
55187	Pork	W. J. Nash, Bristol	No parasites found
55224	"	O. McShane, "	" " "
55225	"	Hewitt, "	" " "
55226	"	T. Trudo, "	" " "
55289	Horse's Liver	P. P. White, Williamsville	Normal
55292	Pork, 3 samples	Harry Sprague, Bristol	No parasites found
55298	"	A. C. Bailey, Randolph	" " "
55299	"	" " "	" " "
55355	Sausage	Mrs. L. B. Kingman, Bristol	" " "
55395	Pork	H. H. Brewster, Huntington	" " "
55401	" Gaudet	F. H. Palmer, Bristol	" " "
55402	" McGerrick	" " "	" " "
55606	" Sturdevant, 1 and 2	R. D. Landon, N. Haven	" " "
55607	Pork, A. B. Hoffnagle	" " "	" " "
55608	Pork, F. M. Merril, 1, 2 and 3	" " "	" " "
55609	Pork, R. D. Landon	" " "	" " "
55610	Pork, M. D. Landon	" " "	" " "
55732	Pork, Casey & Hazeltine	F. H. Palmer, Bristol	" " "
55757	Cow's Lung	Dan Connoly, Burlington	Tubercular
56122	Pork, Ham, 1 and 2, Fitzsimmons	F. H. Palmer, Bristol	Trichinæ present in both samples
56128	Pork, Bristol	" " "	No parasites found
56129	" Parinton	" " "	" " "
56161	"	G. F. Edmunds, "	" " "
56206	Kidney, Hog	C. F. Ball, Rutland	Malignant growth
56302	Pork	Elroy La Count, Bristol	Trichinæ present
56321	Internal Organs of Hog	Chas. St. John, Burlington	Normal
56808	Pork, H. Jinmo	F. H. Palmer, Bristol	No parasites found
56849	"	C. D. O'Bryan, "	" " "
57181	" C. Rivers	F. H. Palmer, "	" " "
57182	Heart and Lung	" " "	Decomposed
57494	Beef	" " "	Normal
57573	"	W. N. Bryant, Ludlow	Diseased and unwholesome
57740	Pork, Nos. 1 and 2	G. F. Edwards, Bristol	No parasites found
57812	"	Willey Bros., Cambridge	Normal
58043	"	John Crowley, Starksboro	No parasites found

Total, 85.

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

Volume VIII. No. 4.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

The New York legislature has just defined the powers and duties of local boards of health and local health officers in the matter of the protection of the people of the state from tuberulosis. Among these provisions is the following: Tuberculosis is declared to be an infectious and communicable disease, dangerous to the public health. It is made the duty of every physician to report all persons known by him to have tuberculosis.

Tuberculosis From Butter.

The close connection between the pure food movement and the campaign against tuberculosis, which is engaging the attention of the world at the present time could not be better shown than by the results of the elaborate investigations made by the United States department of agriculture on the dairy industry, relative to its responsibility for the "White Plague." The result of the latest of these investigations has been reduced to the form of a report to the secretary of agriculture dated January 22, 1908, by the chief of the bureau of animal industry, and introduces an able article of twenty pages by Dr. E. C. Schroeder, M. D. V., superintendent, and W. E. Cotton, expert assistant of the experiment station, entitled, "Tubercle Bacilli in Butter: their Occurrence, Vitality and Significance." (Issued April 4, 1908, as circular 127.)

Numerous experiments were made by inoculating guinea pigs with butter infected with tubercle bacilli, and by noting the effects; and these experiments combined with the investigations by other eminent foreign and American experts upon tuberculosis, which are referred to in the article, together with the opinion of the authors, make up the pamphlet, which is most instructive and which closes with the following summary:

SUMMARY.

(1) The conduct of tubercle bacilli in milk is to move both upward with the cream and downward with the sediment and thus, in both directions, away from the intermediate layer of skim milk. The downward movement is due to their high specific gravity and the upward movement to the tenacity

Digitized by Google

with which they adhere to the comparatively large cream globules. Hence when cream is separated from infected milk it will contain, volume for volume, more tubercle bacilli than the milk.

(2) The frequency with which tubercle bacilli occur in sediment from milk is a fair measure of the frequency with which they occur in cream. What this means for the infection of commercial cream may be judged from the following paragraph quoted verbatim from the last annual report of the secretary of agriculture:

"The examination of sediment taken from cream separators of public creameries throughout the country has demonstrated the presence of tubercle bacilli in about one fourth of the samples."

(3) When butter is prepared from infected cream, tubercle bacilli are transferred to it in such numbers that they will be present in greater concentration that in the milk from which the cream was derived; hence, measure for measure, infected butter is a greater tuberculous danger than infected milk.

(4) Tubercle bacilli embedded in ordinary salted butter remain alive and virulent a long time; after ninety-nine days they show only a doubtful reduction of pathogenic virulence.

(5) Butter seemingly contains nothing excepting salt that acts against the life and virulence of tubercle bacilli. The germicidal value of salt, especially in the proportion in which it is used in commercial butter, is very low. Besides, the distribution of salt in butter is not homogeneous, and hence tubercle bacilli may be so embedded in butter that they are not exposed to the salt it contains.

(6) Sunlight is the most potent, natural agent for the sterilization of tubercle bacilli; it kills them in less than one hour when they are exposed to the direct rays of the sun in translucent layers of infectious pus, and in less than five hours when they are exposed in thick, opaque masses of such pus. Weinzirl asserts that tubercle bacilli, as well as other nonsporulating pathogenic bacteria, are destroyed in from two to ten minutes by direct sunlight, and Koch, Jousett, Flügge, Heymann, Di Donna, Cadéac, and others earlier called attention to the rapidity with which tubercle bacilli are destroyed by desiccation and exposure to light. Hence, we may conclude that the conditions by which tubercle bacilli are surrounded in butter, the moist opaque character of which shields them against the germicidal action of light and drying, are ideal for their long preservation. As a matter of fact it is difficult to imagine a better environment for the conservation of the life and virulence of tubercle bacilli not actively associated with tuberculous lesions than butter affords.

(7) Unimpeachable evidence proves conclusively that tubercle bacilli of the bovine type, from bovine sources, must be classed as highly infectious for man; hence, tubercle bacilli in butter cannot be ignored, because they are usually derived from the bovine sources.

(8) Since tubercle bacilli of the bovine type are certainly more virulent

Digitized by Google

than those of the human type for all species of animals with which comparative tests have been made, it seems reasonable to ask, Why should they be regarded as less virulent for man?

(9) Tubercle bacilli of the bovine type are more frequently associated with the tuberculous lesions of children than with those of adults. Does this mean that children are oftener affected with tuberculosis from bovine sources than adults, or does it mean that mutations, shown to occur among tubercle bacilli, have had more time to pass thr ugh a complete transition from the bovine to the human type in tuberculous adults than in tuberculous children? This question is of special interest in connection with Von Behring's view—that tuberculosis, at whatever age it occurs and wherever the lesions are located, arises from latent tubercle bacilli that entered the body through the intestinal canal during childhood.

The authority of Von Behring in the field of tuberculosis is so great that we could not afford to discard his view lightly even if it lacked the abundant support other investigators have given it. If it is true, we certainly have good reasons to believe that the mutations, which quite a number of investigators have recorded as occurring among tubercle bacilli, have had ample time in the lesions of adults to result in a complete adaptive transition from the bovine to the human type of bacillus. Tuberculosis is undoubtedly contracted from two great sources, namely, from tuberculous individuals and tuberculous cattle. When contracted by persons from a human source the bacilli should have the human type; when contracted from cattle we should find the bovine type common in the lesions of young children, less common in those of older children, and very rare in adults. The occurrence of the bovine type, or of transition forms, in the lesions of adults would signify an exception to the rule of infection through latent bacilli introduced into the body during childhood.

This conception of tuberculosis, like most other modern views of the disease, brings with it no encouragement to regard tuberculous dairy products with complacency; on the contrary, it stamps the tuberculous cow as one of the greatest dangers to which public health is exposed.

(10) The inhalation theory to account for the occurrence of pulmonary tuberculosis has been shown to be no longer tenable, because no substance can be carried into the finer bronchioles by the respiratory process, and because tuberculous lesions in the lung have been shown to spread from the vascular system, the finer capillaries, and not from the air passages. Dried and pulverized tuberculous material has been shown to lack infectiousness, and the infectious spray discharged from the mouths of tuberculous persons during speaking and coughing has been shown to be of importance only in their immediate environments unless such persons are permitted to handle articles of food, to which the larger droplets of the spray may adhere. The introduction of bacilli into the body through the uninjured wall of the digestive tract, anywhere from the mouth downwards, has been shown to be the chief mode of infection with tuberculosis.

Digitized by Google

Consequently, fresh, virulent tubercle bacilli in articles of food must be regarded as the greatest of tuberculous dangers, and among these, tubercle bacilli in butter, because of their frequent occurrence and their long-continued life and virulence, must rank very high as a danger of the utmost significance for public health.

(11) It is imperatively necessary for the protection of public health that all dairy herds should be cleared of tuberculous animals. It makes no difference whether the milk obtained from a tuberculous herd, or a herd that contains one or more tuberculous animals, is sold as milk or cream or butter; in all forms it is equally objectionable and dangerous. It is not a question of the exposure of children alone, but also of adults; the former drink more milk, but the latter eat butter oftener and in larger quantities.

(12) Until we are certain that the milk delivered to us by dealers is obtained from healthy cows in every way protected from exposure to tuberculosis, we should not use it until it has been pasteurized or sterilized, and all cream that is not above suspicion should at least be pasteurized before it is used in the preparation of butter.

While we are not special advocates of the pasteurization or sterilization of dairy products, we recognize that the public is forced to resort to some such expedient for its protection, not only against tuberculosis, but also against numerous other infections. Thoroughly clean dairy products require no pasteurization. While unclean, pasteurized milk is fairly safe, unclean raw milk is to-day the most important cause tolerated by civilization for unnecessary disease, suffering, and death.

To Health Officers:—It is apparent that, in too many instances, the first cases of various communicable diseases are not reported to the health officer, the result being that these diseases are spread broadcast. We would therefore call the attention of all local health officers to chapter 225, section 5454, of the Public Statutes. This section imposes a fine of not more than fifty nor less than ten dollars on any head of a family or a physician who fails to give such necessary notice. You will, in the future, in all cases when any of the communicable diseases which may exist in your town are not reported promptly to you, either by the head of the family or the attending physician, at once report the case to the state's attorney of your country, with such evidence as you may be able to secure with reference to such omission to report, with the request that he will prosecute the parties who have failed to make report as required by law. See Section 5464, Public Statutes.

Foods that Do Not Comply with the Law:—The State Board of Health has directed Dr. L. P. Sprague, one of the chemists of the Laboratory, to seize and destroy any food substances which do not meet the requirements of the pure food laws of the state.

Digitized by Google

TENTH ANNUAL

SCHOOL OF INSTRUCTION FOR HEALTH OFFICERS

BURLINGTON, VT.

June 29 to July 2, inclusive, 1908

PROVISIONAL PROGRAM*

MONDAY EVENING, JUNE 29, 8.00 O'CLOCK.

Address: Charles S. Caverly, M. D., President of the State Board of Health, Rutland.

Address: Governor F. D. Proctor, Proctor.

Address: Hon. Walter J. Bigelow, Mayor of Burlington.

Address: Judge Edward C. Mower, Burlington.

TUESDAY MORNING, JUNE 30, 9.30 O'CLOCK.

"Infectious Diseases," by Charles C. Caverly, M. D., President of the Board.

Discussion: W. B. Hyde, M. D., Bakersfield; J. H. Bean, M. D., Cambridge; F. C. Kenney, M. D., Greensboro.

"Nuisances—How Cared For," by S. E. Darling, M. D., Hardwick.

Discussion: H. E. Somers, M. D., West Derby; M. P. Stanley, M. D., Hartford; I. S. Coburn, M. D., Milton.

TUESDAY AFTERNOON, JUNE 30, 2.00 O'CLOCK.

"The Local Health Officer and Local Boards of Health," by H. L. Stillson, Esq., Bennington.

Discussion: A. C. Bailey, M. D., Randolph; C. M. Campbell, M. D., Rochester; Fred C. Russell, M. D., Wells River.

* Subject to slight modifications.

Digitized by Google

"Sanitation of Public Buildings," by William Paul Gerhard, C. E., New York City.

Discussion: S. W. Butterfield, Weathersfield; C. B. Kent, Dorset; Prof. D. B. Locke, Superintendent of Schools, Rutland.

TUESDAY EVENING, JUNE 30, 8.00 O'CLOCK.

"Advanced and Simplified Plumbing," with lantern slides, by William Paul Gerhard, C. E.

Discussion: Henry Tucker, M. D., Brattleboro; H. L. Townshend, M. D., Bridport.

WEDNESDAY MORNING, JULY 1, 9.30 O'CLOCK.

"Bovine Tuberculosis, Relative to the Effect on the Human Subject," by V. A. Moore, V. S., Ithaca, N. Y.

Discussion: H. D. Chadwick, M. D., Superintendent Vermont Sanitarium, Pittsford; C. W. Peck, M. D., Brandon; W. N. Bryant, M. D., Ludlow.

"Ideal Dairying and Ideal Milk," by Charles Harrington, M. D., Secretary Massachusetts State Board of Health, Boston.

Discussion: L. P. Sprague, M. D., Food Chemist, Laboratory of Hygiene, Burlington; Prof. J. L. Hills, Experiment Station, University of Vermont; A. Morton, M. D., St. Albans.

WEDNESDAY AFTERNOON, JULY 1, 2.00 O'CLOCK.

"Slaughter Houses and Meat Inspection," by R. O. Brock, V. S., United States Inspector.

Discussion: C. F. Ball, M. D., Rutland; W. H. Ranks, M. D., Shelburne; James Haylett, M. D., Mooretown.

"Practical Phases of Laboratory Work," by B. H. Stone, Director of the Laboratory of Hygiene, Burlington.

Discussion: C. F. Dalton, M. D., Burlington; F. H. Palmer, Esq., Bristol; Thomas H. Hack, M. D., Proctor.

WEDNESDAY EVENING, JULY 1, 8.00 O'CLOCK.

"The Nature and Control of Bovine Tuberculosis," with lantern slides, by V. A. Moore, V. S., Ithaca, N. Y.

Discussion: Prof. C. L. Beach, Burlington; H. S. Wilson, Cattle Commissioner for Vermont, Arlington; George Aitken, ex-Secretary of

Digitized by Google

the Board of Agriculture, Woodstock; F. L. Davis, Secretary of the Board of Agriculture, North Pomfret.

THURSDAY MORNING, JULY 2, 9.00 O'CLOCK.

"Health Laws," with Question Box, by Hon. Benjamin Gates, State's Attorney for Washington County.

Discussion: H. L. Manchester, M. D., Pawlet; Hon. A. A. Butterfield, Jacksonville; George B. Hulburd, M. D., Jericho.

ACT NO. 90, OF LAWS OF 1900, AUTHORIZES THE ESTABLISHMENT OF A SCHOOL OF INSTRUCTION FOR HEALTH OFFICERS OF THE STATE.

In accordance with the provision of this law the Tenth Annual School for the Health Officers of the State will be held in Armory Hall, Burlington, opening Monday evening, June 29, at eight o'clock. All health officers of the state are hereby notified and called to be present on that date to attend the sessions of said School. Only in case of his sickness will any health officer be excused for non-attendance; such excuse must be filed with the Secretary.

Per order of the State Board of Health.

HENRY D. HOLTON, *Secretary.*

This School is held for the purpose of giving instruction to health officers.

Every member of a local health board should register immediately on arrival.

The public are invited to be present, as every citizen will be equally interested and instructed.

Arrangements will be made with the railroads of the state to give convention rates to all those attending the School.

The selectmen, with the local health officer of every town, constitute the local board of health. The selectmen are especially urged to be present.

The Laboratory of Hygiene, 196 Main Street, will, as usual, be open at all times to visiting health officials, and all are expected to make free use of the Laboratory rooms.

A register of the School will be open at the Armory, where hand baggage and overcoats may be checked at any time. Those who wish board in private families will find there a list of boarding houses.

Digitized by Google

14.0979
v 2 6

UNIV. OF MICH.
SEP 21 1908

Bulletin No. 1, Volume IX.

Issued Quarterly by

Vermont State Board of Health,

September 1, 1908.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS:

Address at Opening of School for Health Officers, June 29, 1908, by Charles S. Caverly, M. D., President State Board of Health. Page 3.
Address by Governor F. D. Proctor. Page 6.
Address by Hon. W. J. Bigelow, Mayor of Burlington. Page 8.
Address by Judge Edward C. Mower. Page 10.
Slaughter-House and Meat Inspection, by R. O. Brock, V. S., United States Inspector. Page 18.
Ideal Dairying and Ideal Milk, by Charles Harrington, M. D., Secretary Massachusetts State Board of Health. Page 33.
Report of Examinations at the State Laboratory. Page 46.
News Items. Page 63.

BRATTLEBORO, VT.
1908

Digitized by Google

Digitized by Google

ADDRESS AT OPENING OF SCHOOL FOR HEALTH OFFICERS, JUNE 29, 1908.

By Charles S. Caverly, M. D., President State Board of Health.

Concerted work for the public health in Vermont, with modern facilities, dates back ten years. The State Board of Health—with powers more or less advisory simply—is twelve years older.

The legislature of 1898 established a "State Bacteriological Laboratory," to quote the Act, "for the chemical and bacteriological examination of water supplies, milk and food products, and the examination of cases and suspected cases of diphtheria, typhoid fever, tuberculosis, malaria and other infectious and contagious diseases."

The language of this statute was specific in respect to the purposes for which the Laboratory was founded, and it further specified that its use was to be free to the people of Vermont. Certain definite objects were in view, looking to the betterment of health conditions here, and the Laboratory was designed to benefit all the people. It is perhaps impossible at this time to measure the full significance of this law, or to estimate the effect it has had on our people. If its success can be gauged by the amount of work it has turned out, by the character of that work, or by the number of those who have used it, the legislature of 1898 acted wisely.

The Laboratory has surely made a place for itself among our state institutions, and we believe it is filling that place in a creditable manner. It has done the work it was set to do. It *has* examined our water supplies, milk and other food products, cases and suspected cases of contagious disease, and it has done more of these examinations with each succeeding year.

The Laboratory, designed for hygienic work alone, has had its work and responsibilities increased by succeeding legislatures, and it is now not only a laboratory of hygiene, but a general chemical and pathological laboratory for the state.

As a factor in official and practical sanitation, the Laboratory is now everywhere recognized as a prime necessity. Our Vermont Laboratory, a pioneer in state laboratories, has served a most useful purpose along all the lines intended by its early advocates, and has reflected credit upon the state.

It is not my purpose, however, to laud the Laboratory. This is unnecessary here at home.

This Health Officers' School and the Vermont State Laboratory of Hygiene are twin institutions. The same movement for better health conditions here produced both. The School came with the Laboratory: the one was planned to give force and direction to the other. The suggestion of the School came from a desire to widen and increase the use of the

Digitized by Google

Laboratory among all our towns. It was thus desired to familiarize the health officers with the work which the Laboratory was designed to do, and to demonstrate to them its possibilities. So should all our people reap its full benefits.

The Laboratory was established in 1898; this School held its first session the following summer. The program of the first School included four sessions devoted to demonstrations of the work at the Laboratory. The functions of the public health laboratory ten years ago were not as well understood as at the present day. Many of our health officers and many physicians were then unfamiliar with the bacteriological findings in diphtheria, typhoid fever, malaria and even tuberculosis, or the importance of the Laboratory in water and food analyses. So Dr. Linsley, whose enthusiasm in the work we must always remember, made this really a "school of instruction," and was himself its energetic teacher.

The School was an innovation in practical sanitation; it was an experiment. No other state had then taken such a step. The experiment was a success from the first, and its success was so evident that the succeeding legislature legalized the School, in an amended Laboratory Act, and provided for its maintenance. It is proper that at the opening of this, the Tenth Annual School of Instruction, we should take this hasty glance at its history.

This School has done what it was intended to do, and more, for our public health work. We have had, as many of you are aware, the best instructors the country afforded. Specialists in some lines of public health work have been here every year, and the local health officers of Vermont have generally profited by their teachings. The technical instruction we have received has been valuable, and perhaps as valuable have been the opportunities the School has furnished for conference and comparison of notes. We have all done better work along these lines, and our work has been more uniform.

We have learned here that town lines are imaginary lines where unhealthful influences and contagious disease are concerned, and that collectively we are responsible for the health of the state.

We have, I believe, steadily become less selfish in our zeal for the good of our individual towns, and more neighborly as we have become acquainted with each other.

So much for the past. What of the future? Our Vermont sanitation is not yet perfect. Our sickness and death rates from preventable disease are still too large. It is not enough that these rates have in many instances been cut in two, that our people suffer less from nuisances injurious to the public health, that we have better schoolhouses, purer water, and cleaner and more honest foods. We all know the limit is not reached in these directions.

Perhaps the greatest need of the time in furthering public health work in Vermont and elsewhere, is the active sympathy of the public; a

Digitized by Google

sympathy which will not only tolerate health regulations, but insist on them.

This School should be a fountain-head for sanitation, whose teachings should reach, through us, every hamlet in Vermont.

Even as the Laboratory was formally dedicated by law to the people, so this School is for their benefit. Both are *public health* institutions.

The spirit of sanitation is abroad in the land. It is a cheering sign of the times that the press and social and literary clubs and societies are oftener lending their influence to the diffusion of authentic sanitary knowledge.

Popular sentiment, popular demand in this country are the supreme law. These are potent spurs to official vigilance and activity. They cannot be ignored. Health laws are less unpopular than formerly, if not really more popular. The same public sentiment that renders our school laws, our liquor laws, our game laws effective, is bound to demand the enforcement of these health laws that more than all others vitally affect our homes and persons. Just so far as we are able to demonstrate to the public that preventive legislation does prevent those ills which are the common foes of humanity, shall we be able to enlist that public in our cause. The health laws must be founded on a popular demand else they are bound to be a dead letter Our present health laws are much the same as those of our neighboring states. These laws have multiplied rapidly during the last two decades, for modern sanitary science is the product of these twenty years. We have laws enough, and our energies should now be directed to perfecting these and securing their enforcement. This School should foster obedience to law. It is a poor law that is binding on our neighbors, but exempts us. There is no surer test of good citizenship than one's willingness to submit gracefully to health regulations, to suffer temporary hardships for the common good.

In the universal crusade for pure water, clean milk and honest foods, we in Vermont must do our part. Regulations dealing with these subjects are an innovation and are apt to jar our preconceived ideas, as an invasion of individual or corporate rights. Yet we know, from the teachings of this School, that these are matters of public health, and that our private business interests are of secondary importance to the health of all.

Each advance in sanitary administration is bound to meet strenuous objections. Each such advance requires patience and tact on the part of the officers of the law. Such patience and tact should result from our intercourse at these Schools.

The public is entitled to our confidence in all these matters; our official acts should bear the fullest publicity. The present Laboratory law authorizes the State Board to publish "a periodical giving the results of the work done at the Laboratory and the approved methods for the protection of the public health, and such publication shall be furnished free to health officers." This periodical, The Bulletin, is utilized for the purpose of

Digitized by Google

giving the health officers and the public the "results of the work done at the Laboratory," as the law directs, and it is further utilized to spread the teachings of this School.

It is evidently the intent of this law that we, as guardians of the public health, should be frank with the public. In this connection it is proper to mention the relation which local health officers should maintain to their several communities. There should be no secrets between such officers and the public, except so far as individual misfortune and the dictates of humanity direct. The general state of the public health should be matter for public record. Health officers have no right to blind their constituents to the dangers of epidemics, nor should they influence the public mind with imaginary perils.

It is equally injurious to minimize the perils of threatened pestilence from contagious disease or polluted water, or of adulterated food products, and to magnify such dangers.

Every health officer should give his community the benefit of his official knowledge, in plain and temperate language, on all subjects affecting the public health. Most of our newspapers will willingly cooperate with these officers in such matters, with signal benefit to all concerned.

Such publicity will enhance the public confidence in our health departments, will cultivate respect for our health laws, and will allay suspicions and fears which have their foundation in half truths circulated by common rumor.

The public is getting interested in medical matters, and especially in *preventive* medicine. The rapid development of our art, during recent years, has attracted popular interest. We ought to see that interest is properly directed and cultivated. To this end this School should serve a useful purpose. Its teachings should be wholesome reading for all our people.

The successful maintenance of this Health Officers' School for ten years is a matter for congratulation. Those of us who have been regular attendants may be excused for taking a measure of pride in the success of this venture. We believe the School has a future full of good for our whole state.

ADDRESS.

BY GOVERNOR F. D. PROCTOR.

I see the program has me down for an address. This is in no sense my purpose to-night. I am very glad to be here, as I always am to attend

Digitized by Google

these meetings, for I believe that of all the organizations, all the different companies of men who gather under different auspices and for different purposes in the state, none have a greater duty or a greater opportunity for real practical helpfulness to the people of Vermont than these meetings of the local health officers. It seems to me that the continuance of these meetings, the good attendance at the sessions, and the increased interest shown in them, are all indications of the real, genuine and practical merit in the work and of its need in Vermont. This work, as every health officer knows, has run counter to a long and fully established precedent. It has met the opposition of an unreasoning and unreasonable prejudice. It has often called for immediate financial sacrifice, and the people have failed to look forward to the great financial saving. It is sometimes little understood, sometimes misinterpreted, and sometimes, as every health officer knows, it is vigorously and strongly opposed. It has for different reasons never met with real easy progress. It seems to me that the splendid improvement we find in these conditions in Vermont and the advance made along all health lines, is ample proof of the good judgment and energy exercised by those having these matters in charge as well as the good common sense of our people. We all know many instances where the law and regulations laid down by the State Board of Health have been of the greatest service to our people. Through these laws and regulations there has been a saving of life, sickness and suffering, and no one can tell how large a financial saving. But the direct result of specific law and regulation does not begin to tell the whole story It is by no means all there is of this great work. It is the great educational feature, the great toning up of public sentiment, the bringing to the great mass of our people a full knowledge of what they themselves may do to save themselves and others sickness, suffering, misery, loss. We all know that human nature is such that it is sometimes necessary to tell us what we must do. Sometimes the *may* will not answer, and when it does not, then I believe it is the duty of the State Board of Health and local health officers to tell us what we must do. We must, as health officers, remember that it is not a question of convenience; it is usually a question of great inconvenience. It is not an economic question; it is a question that often calls for a large financial sacrifice. It is a question of health or sickness; a question of life or death, and as health officers it is not only your right but your duty to guard and guide the public in this great work. Public opinion and sentiment in Vermont has advanced. Any one who has studied this subject for the past ten years must admit a splendid advance. We have but to cite several communities in proof of what a pure water supply will do. Every community knows what strict quarantine will do in preventing the spread of contagious diseases. There is not a hamlet in Vermont which has not experienced the benefits of our State Laboratory. While the work may sometimes seem to pinch here and there, and while individuals and even communities may temporarily rebel at its

Digitized by Google

authority; while sometimes we hear murmurings that this or that law is burdensome and unnecessary, yet as a whole the people of Vermont are in hearty accord with the work and we all know infinitely better because of it.

As to the future work, I believe that we have simply to hold fast to the good already accomplished. I believe, as Dr. Caverly has just said, we have law enough. There possibly should be some amendments, but as a rule we have law enough. We should hold fast to the good already accomplished, and move forward firmly, always firmly, and at the same time with reasonable conservatism. I believe as the people of Vermont are made to see that the benefit is theirs and solely and absolutely theirs, they will welcome this work and move forward with it. I believe strongly in its publicity. The more we talk about it the better. I wish it might have a part in every public gathering held under state authority; that the work of the State Board of Health might have a part in every educational meeting and agricultural meeting held throughout the state, for there is no part of these meetings that has as far-reaching effect or as great an influence upon the well-being of the state as this great public health work. I wish the press, the greatest medium for reaching the public, might take a more active part in the work. As the people of the state are made to see what this work in reality is and what it means to the future growth and welfare of the state, I believe the people and not the profession will lead in the demand for its advance.

ADDRESS.

BY HON. W. J. BIGELOW, MAYOR OF BURLINGTON.

I have been asked to speak a word of welcome to a great many different organizations during the past year, but this is positively the first one for which I have had to come and do it over again. I shouldn't have dared to come here, but I know you are experts in the treatment of public nuisances, so I thought it would be safe for me to come and try.

I want to repeat what I said to you a year ago; you are most cordially welcome to the Queen City of the state; to all of its beauties, to all of its pleasures and to all of its advantages. We are glad to see you, not because we hope you are going to have a good time here, but because we hope your meeting will be a direct benefit to the state as a whole.

One thought came to me in thinking of this organization. You know the popular cry is, the rich are growing richer and the poor poorer. This organization, it seems to me, is directly opposite to that doctrine. You are

Digitized by Google

working not for the benefit of a few but for the benefit of the whole. You are standing not for the interest of a few individuals, but for the interest of your whole community; and you are getting for each community here in Vermont, better advantages, better possibilities, better health and better citizenship, than could be secured without your aid. You are benefiting the whole community and the whole state. I am glad you are engaged in this work and that you are willing to give so much of your life and service to us, because it certainly is one of the crying needs of our time. We come here to-night with a feeling of satisfaction. In the first place, we all feel pleased at the spirit of progress that pervades the health organizations of the state of Vermont. We are pleased with the passage of progressive laws that has been effected and the public spirit that has been exercised and has helped in the enforcement of them. As a city we are pleased to come to you to-night and say that we have a health department here thoroughly organized, and we are confident we have in charge of our health matters a man who has the very best interests of the city at heart and an organization that is giving us honest and vigorous support and trying to carry out to a successful end the policy which you are insisting upon as a state organization.

I believe I said a year ago that when you came here again we would have filtered water. We are filtering the water, but, as I understand the matter, the work has not yet been completed; it has been pushed along as rapidly as possible, and Burlington, instead of trying to see what she might do in the courts, has most thoroughly endeavored to carry out the suggestions your State Board of Health made to us, not to harm but to benefit us. We don't care so much for a decision from the Supreme Court as to this matter as we do to give the public the very best article obtainable.

Notwithstanding the spirit of progress that has prevailed, particularly in all health matters, there seem to me to be things which need more serious attention. I have been disturbed with the thought that while the Federal government has provided an inspector of meat whose duty it is to guard us from diseased meat shipped into the state and guard our neighbors against diseased meat shipped out of our state, still here in Vermont we cannot regulate the killing and selling of our own meat. In some instances I fear we have had to take what they could not ship out of the state to somebody else. Now that is not as it should be. It is a very serious matter to be compelled here in Vermont to take cattle which others refuse. I feel that I am entitled to just as good meat from cattle killed in Vermont as the man living over in New York State is, and I hope this state organization will investigate the matter; will give it serious study and be able in the near future to secure better regulations for the killing and selling of meat in Vermont than we have at the present time.

I have noticed the figures recorded in your work and the great decrease in the number of deaths from tuberculosis in Vermont. I noticed that

Digitized by Google

there was an increase in the number of deaths from some other causes and a thought came to me that if this intelligent discussion which you have given to the matter of tuberculosis has brought about such beneficial results, why would it not be a good thing for you to include in your discussions the subject of eating? I believe that a great deal of the shortening of life is effected through the abuse of eating as well as through the lack of fresh air. I feel that this is one of my weaknesses. I am not able to control myself, so I appeal to you for state aid. I wish I might have heard what has been said to-night; I should then know when to stop, perhaps. But there is little more I can give you in the way of advice. It is my pleasure to wish you success in your undertaking and another year of progress and prosperity in the great work in which you are engaged.

ADDRESS.

BY JUDGE EDWARD C. MOWER.

It may be reassuring to you to know at the outset that I have not been tempted into undertaking a technical discussion involving special knowledge of that body of learning for the advancement of which this School is maintained. A lawyer assuming to discourse upon a medical or hygienic topic would be much like a physician in the throes of a discussion of the Rule in Shelley's case, or the evolution of trial by jury,—with this difference, perhaps: The lawyer's discourse does not necessarily presuppose superior knowledge of the subject treated. His business is to convince, not to instruct; to marshal with logical skill facts more or less familiar to his auditors, rather than to invade new fields of learning.

In glancing through the records of these meetings, I have noticed that various aspects of the work of the health officer have been presented from time to time—its sanctions and limitations, its vital relations to other activities of organized society, its importance in the conservation of the life and welfare of the individual. No more appropriate and inspiring lines of thought than these could well be conceived; but I am not disposed to lead a forlorn hope by way of an attempt to better the discussion of these subjects to which you have listened in former years. I have ventured, rather, to let my theme take a somewhat broader range. Assuming that I am to address myself particularly to professional men, I invite your attention briefly to a discussion of some of the conditions under which professional work is done at the present time.

The wise merchant pauses once or twice a year in the routine of his

Digitized by Google

buying and selling to take an account of stock. Only thus can he know whether he is making headway or falling behind; whether the community in which he is undertaking to do his business recognizes a need of his merchandising, so that its patronage warrants a continuance of his enterprise, or by its lack of patronage serves notice upon him that it can do without his business.

The professional man cannot take inventory of his wares, nor is it with him exactly a question whether or not his intellectual commodities are still in demand, so as to warrant a continuance in business; but rather the question with him to-day is one of the continued supremacy of those ideals of achievement and success, of duty and opportunity, for which his work stands, if it stands for anything.

There is an unmistakable tendency at the present time, at least in certain quarters, to decry and belittle the professions. Men still enter them in great numbers, to be sure, but not, I believe, with quite the former assurance that in this direction lies the promise of a large success measured by popular standards. I am told that the entering classes in our professional schools are smaller when times are prosperous and business openings abundant, and larger when the inducements to enter upon business careers are less flattering by reason of hard times. In other words, in deference, as I conceive, to popular estimates of success in life, the prospective professional career is "dollared," so to speak, and is abandoned by many young men if it fails to stand the pecuniary test of comparison with a business career.

On the occasion of the centennial anniversary of the University of Vermont, four years ago, Darwin P. Kingsley, then one of the great officials of the New York Life Insurance Company and now its president, delivered a most eloquent and scholarly address. After reviewing the social developments of the century then ending, he expressed his conclusion therefrom that the so-called learned professions had become relegated to a secondary place in the social economy of the American people. His contention was—and I mean this by what I have just said—that these professions no longer offered opportunity for the achievement of the great careers; that rather in the world of business, with its colossal aggregations of capital, its vast financial undertakings, its command of those resources which dominate in the markets of the world, was to be found the possibility of the highest personal achievement.

It cannot be doubted that the sentiment to which Mr. Kingsley gave voice is widely, and perhaps increasingly, entertained in these latter days. The triumphant industrial and commercial spirit of the age looks with a sort of mild contempt upon the so-called learned professions. It notes with hardly concealed relish the sentiment, by some honestly entertained, by others indulged as a bit of fine sarcasm, that medicine as practiced to-day is a compound of quackery and guess work, and the physician a pensioner upon the bounty of the real producers in his community. It professes to

Digitized by Google

assume that theology has no vital relation to modern life; that it is suffered to persist, in part, because, forsooth, industrial society is too humane to disturb the equanimity of those few who really have faith in the Church; and that the minister is maintained, on a basis of strict economy, to be sure, because the Church cannot exist without him, and to let the Church go by the board would be to reflect upon the social standing, and so imperil the commercial prestige, of the community. It makes the easy assumption that the lawyer is a necessary social evil, to be consulted in case of necessity only, and then if possible in passing, so that a maximum of legal information may be acquired, with a minimum of possibility that a fee will be charged therefor; and that the legal profession deals with an antiquated and outgrown system of technical rules and maxims, designed to delay and hinder justice and bulwark the influential suitor against the weak and oppressed.

Now, one would not for a moment question the genius, or belittle the achievement, of men who, by sheer merit, have risen to leadership in the world of finance. We must do all honor to the captain of industry, whether his triumph be the evolution of a three-dollar shoe, or the building of a railroad.

Much plausibility must be conceded to the superior claims of business. This is an age of vast industrial undertakings. Our imaginations are fired, naturally and rightly, by the achievements of the great commercial organizers—the Rockefellers, the Morgans, the Hills, the Harrimans; and in the glamor of their genius we lose sight of the everlasting truth that fidelity to a moral principle, loyalty to a civic ideal, are greater than railroad systems, more commanding than monopolies.

Nor would one belittle the absolute value of what the business man has done, and is doing, to minister to popular well-being, to extend knowledge, to promote peace and good will. What we do propose to question is the assumption that the careers which are crowned with the most distinguished honors of the industrial world are essentially beyond the realization of men of equal capacity working along professional lines.

It is, after all, largely a matter of definition. What is a great career, to revert to Mr. Kingsley's term? What tests shall be applied to it? By what standards shall it be weighed and measured? Is it a matter of magnitude or quality? Shall it be stated in terms of salary, or of service and sacrifice and loyalty?

In the first place it may safely be said that notwithstanding this is the age of great fortunes—swollen fortunes is the official designation—of vast incomes and princely salaries; notwithstanding the popular temptation to measure a man by the size of his estate, the real sign manual of achievement is not the dollar mark, even to-day. The men of wealth who are also men of distinction to-day are not the latter because they are the former.

The great men of this or any other generation are those in whose biographies one searches in vain for any reference to material acquisition.

Digitized by Google

Mr. Kingsley would count it but as an incident to his real success that he earns a large salary. Wealth is power, but its dynamics depend solely upon qualities of mind and heart; wealth is opportunity, but opportunity waits only upon manhood. Mere wealth never commanded the loyalty of one right-minded man, and never would; and let us remember that this is as true to-day as it ever was, notwithstanding a certain prevalent mammon worship.

Again, the great career is not necessarily one in which a man touches the high-water mark of self-development. Mere knowledge is not power, any more than is mere wealth. Intellectual athletics may result in the evolution of a masterful mind, just as the training of the sawdust ring may educate the eye or the hand to feats of incredible difficulty. But the question is, To what end?

Self-development may be but the evolution of egotism and selfishness; and no self-centered career can be great. Great intellectual attainments in whatever direction, the mastery of vast fields of knowledge of whatever sort, may afford foundation for a great career, but the superstructure has yet to be reared.

Now I think that career may fairly be called great which touches life intimately and powerfully; which leads a man out into the deep currents of contemporary thought; which so relates him to great questions that he must perforce deal with them in some effective fashion. When a man does something of the world's work, does it zealously, unselfishly, faithfully, courageously; when he renders service to his community, and thereby exalts social and political ideals above self, he achieves a worthy career, and a worthy career is a great career, in the true sense. The test of opportunity, of personal achievement, is ethical not physical, dynamic not acquisitive. It is not a question of bank account, but of influence.

Measured by this standard, what shall be said of the promise of the professions to-day? Is the man who enters one of them closing upon himself the door of opportunity? Is the inscription upon the lintel above, "Abandon hope all ye who enter here"—hope of that honorable distinction in his day and generation which it is the legitimate ambition of every man to achieve?

It may be conceded at the outset that modern life has vastly modified the conditions under which professional work was done in former years. The old-time community life is being dissipated by the multiplying means of inter-communication, and the general diffusion of knowledge. The old-fashioned doctor, lawyer and minister—he who monopolized the professional wisdom and lore of the neighborhood, who was great, as it were, by comparison, who lived in intimate touch with his little world and as the center of its intellectual life—is no more. We have smartened up, so to speak, in these latter days. We have become cosmopolitan, and the process has dissipated in a measure the popular reverence once inspired by the superior attainments of the professional man.

On the contrary, as partial compensation for the loss just suggested, it

Digitized by Google

must be said to the honor of the professions, that the learning which would once have sufficed for a professional equipment is altogether inadequate now. This is well illustrated by Dr. Wheeler in his recent article in the Vermont Medical Monthly on "Medical Education in America at the Present Day." He contrasted the preparation for practice required of a student a generation ago—simply three years of study in a physician's office, the relation of preceptor and student being more or less nominal, and two twelve weeks' courses of lectures—with the arduous four years' course of study now demanded of the student. Much of the same change has taken place in requirements for the practice of law. This change has had the effect of greatly enhancing the expense of training preliminary to professional work, and of postponing the time when the young man may enter upon the serious business of life. In these respects it has developed better practitioners, on the average, but it deters men from entering the professions who might win honorable distinction therein.

Moreover, to some extent the professions have latterly taken on a mercenary aspect, because incomes must be larger now than formerly sufficed for a reasonable livelihood. Not long ago I saw in the public press an article entitled, "The Business Side of the Doctor's Profession," the point of the discussion being that a medical education, including the preliminary preparation, is so expensive and consumes so many of the earlier years of productivity, and the emoluments of the profession so near the line of subsistence, that the physician is almost certainly foredoomed to comparative poverty. The writer quoted a celebrated New York specialist as saying that he doubted whether there were in all New York one hundred doctors who could retire from practice and not starve to death within a year. He continued: "Our expenses increase with our income, and while the average business man can hope to retire some day, the average medical man retires when he dies." Without question this disquieting statement applies equally to law and theology; but what of it? It is said that the lawyer works hard, lives well, and dies poor; but I maintain that this, if true, is no impeachment of the profession. There is no other way to work and to live, and as for the dying, we lawyers leave that entirely to the doctor and the undertaker. Surely a man's profession should yield him a livelihood and something more, and if conditions have become such that it does not, with reasonable economy, then there is trouble somewhere demanding a remedy.

But notwithstanding these new elements of professional environment, and many more that might be suggested, what shall be said on the whole of professional work at the present day, in respect of individual opportunity for real service and substantial honors? Without attempting to enter upon the whole professional field, let us consider for a moment how it is with the ministry.

It is said with some truth that the theological schools of to-day are for the most part deserted; that the churches are confronted with a real prob-

Digitized by Google

lem of self-maintenance; that ambitious young men are not only turning to other vocations in the choice of a career, but are actually abandoning the pulpit for the counting room; that the newspaper has usurped the functions of the sermon, so that the minister no longer speaks with his old-time power and authority; that in spite of all churchly opposition we are drifting steadily away from the Puritan Sabbath and in the direction of the continental Sunday. In a word, in the popular mind, at least in the popular speech of the day, things secular more and more overshadow things religious, and so far has this sentiment gone that multitudes seriously question the usefulness of the church.

Now, if the symptoms I have described really indicate disease, I fancy a medical man would prescribe treatment. If it be conceded, as it must be, that the spiritual concerns of men are their supreme concerns; and if the institutions which stand peculiarly for these concerns are disintegrating, then there is work for somebody to do. So far is it untrue, in my judgment, that the ministry is an outgrown and superfluous vocation; never in the Christian era has there been so great an opportunity for the Christian leader as to-day. Modern life demands interpretation. Social problems, all the vast phenomena of democracy, are to be stated in terms drawn from the vocabulary of the Man of Nazareth, instead of from theological glossaries, and when so stated men will listen as never before. To say that we have no more need of the church and its ministers is to deny the reality of our deepest intuitions. To maintain that the ministry affords less opportunity for a great career than business is to affirm that the vast spiritual foundations of life are less important than the secular superstructure, a proposition as false to-day as it was two thousand years ago.

And how as to the law? That the legal profession stands upon a different practical basis to-day from that of two or three generations ago is undoubted. A multitude of questions affecting personal rights and liberties, which formerly engaged the attention of the practitioner, have become too well settled by repeated decisions to be further litigated, and in their place commercial interests have come to the front. The average present-day lawyer devotes more time to non-litigated business than did his predecessor, and less to the more spectacular contests of the courtroom. In so far as his predecessor was engaged in establishing those fundamental rules of law which make for the security of the individual, he was doing public service; and in so far as the emphasis in ordinary practice has shifted from the general principle to the specific application of it, the profession in its daily routine has in some measure lost its old-time dignity and usefulness and degenerated into a business.

But in its wider reaches the law never was so potent as it is to-day. I think it strictly within bounds to assert that never in all the decades of our national history has our political and social horizon been so clouded as it is at this present moment with issues which are fundamentally legal issues; that is to say, issues which demand in their ultimate treatment the

Digitized by Google

application of correct principles of law. The control of corporate wealth within bounds at once just to the owners and secure for the people; the legislative regulation of those great transcontinental and interstate arteries of trade, the railroads, in such fashion that they shall neither confiscate nor be confiscated; the ever-present antagonisms between those two great and necessary industrial partners, capital and labor, ramifying throughout our social order and constantly before us in one form or another—these are among the questions which confront the people to-day; and overshadowing them all, in a measure all-comprehensive, looms the vast, intricate, many-sided question of the constitutional limitations of power as between the states on the one hand and the United States on the other, fundamentally the old question of state's rights, which no war and no supreme court can ever permanently answer, so long as we live under a dual form of government. These questions involve social and economic considerations, to be sure, but at bottom they rest upon law; and the lawyer at the bar, upon the bench, and in the legislative bodies of the land is charged with the responsibility of leadership in applying to these new and complex political and industrial phenomena those principles of law which underlie and interpenetrate all the relations of modern life. This great responsibility means a correspondingly great opportunity; and to say that the career which opens out into these broad fields of public service is foredoomed to mediocrity as compared with the business career, is to exalt commerce above those principles of law and social order which alone make commerce possible.

And what of the medical profession? Are there undiscovered countries in this direction also? Problems unsolved which touch the health and happiness of humanity? Opportunities for service which reach the very foundations of life? Then is a great career possible here also. If contact with life in all its manifold aspects contributes to the building of character, and the ripening of wisdom, certainly medicine is the open door to a real self-development. To deal with the physical basis of life; to enter into a knowledge of those marvelous processes whereby man lives and moves and has his being; to utilize that knowledge in beating back the frontiers of medical science over hitherto unconquered regions; to be constantly face to face with the momentous issues of life and death, not only in the concrete case, but as abstract propositions affecting all mankind—this is to live and achieve greatly; and the man who denies to this field of human endeavor the possibility of a great career, and seeks to exalt business above it, must maintain that the accessories of life are of greater relative importance than life itself.

What we need to-day, more than any other one thing, in public and private life, is the education of a true sense of relative values. So many big things pass for great things, so much noise is hailed as logic, that we are constantly deceiving *ourselves* in our estimates of achievement and

Digitized by Google

success. We need to cultivate the exercise of that calm judgment alluded to by Lowell in his Harvard Commemoration Ode:

"Great Captains, with their guns and drums,
Disturb our judgment for the hour,
But at last silence comes:
These all are gone, and standing like a tower,
Our children shall behold his fame,
The kindly, earnest, brave, foreseeing man,
Sagacious, patient, dreading praise, not blame,
New birth of our new soil, the first American."

In this, the fittest eulogy ever pronounced upon the martyred Lincoln, two types of men, two points of view, two standards of comparison, are implied. We need to-day more men of the Lincoln type, great and small; more emphasis upon those qualities of mind and heart which entitle Lincoln to the verdict of supreme greatness rendered in Lowell's immortal verse.

It is said that the professions necessarily offer restricted fields of activity, while the whole world is the theater of business. If this comparison ever was true, it is not true to-day. No man's sphere of influence can be bounded in this age by hard and fast geographical lines. It may be as wide as he is pleased to make it, and has the genius to make it. But the wide field is not always the fruitful field. The knowledge of the world has been extended not so much by those who have undertaken to compass all learning, as by those who have staked off some small corner of the broad domain and cultivated that faithfully and zealously. The morality of the world has been broadened and deepened not only by the commanding examples of it here and there along down through history, but also, and perhaps in equal degree, by the men and women who have lived their lesser lives with courage and fidelity.

Sometimes we are inclined to think that the conditions of modern life, the breathless hurry and bustle of it, the stern competition of it, the insistent private demands upon it, have wrought a degeneration of men on the side of their public duties; that life has become a matter of hire and salary, not service. We hear it said of Americans, in especial, that they are unwilling to give their time and means to the public service, but on the contrary assume an attitude of indifference in the very face of crying public needs. That there is much, in a superficial view, to justify this pessimism, cannot be denied; but I am one of those who believe that the deeper impulses of present-day life are in the right direction, and that those who seek honestly will find in the average man multiplying evidences of a sense of public responsibility. The princely philanthropies of the day; the rise here and there of men of superior endowment who are willing to sacrifice their private interests in a struggle for clean politics and righteous causes; the spontaneous approbation accorded such men by the masses of the people; the swift popular condemnation visited upon those responsible for corruption in public places—these things are to my mind symptoms of

Digitized by Google

health, not of disease. I believe it to be demonstrable that men are awakening to the fact that citizenship means more than the opportunity for private gain, and that success is dearly bought at the expense of character. More and more is it coming home to the consciousness of educated men that there is no honorable escape from the demands of civic righteousness.

Not the least significant of the health symptoms just alluded to is the whole-hearted devotion of science to the working out of the great problems involved in the modern physical conditions of life, the fundamental aim and purpose of this gathering. Here is presented to the medical man of to-day an unsurpassed opportunity for high public service. Whether in bodies like this or in his individual study and practice, the physician may touch here deep and vital currents of contemporary thought; may here become partner with men everywhere who are striving to better the world by contributing to its sanity of mind and body; may here display a patriotism no less effective and praiseworthy because manifested along the prosy common ways of life.

In the prosecution of this, the great work before you, I bid you Godspeed. Whatever may be the popular estimate of success, let the physician be assured that in the choice of the honorable profession of medicine he has not mistaken the highway to a great and worthy career.

SLAUGHTER-HOUSE AND MEAT INSPECTION.

By R. O. Brock, V. S., United States Inspector.

The history of the meat inspection laws in this country is of interest for more reasons than one. Less than twenty years ago we had no Federal inspection or supervision of meat or meat food products; to-day we have what is acknowledged to be the best and most complete system of inspection in the world. To such an extent is this realized that this year France and Germany intend to send experts here for the purpose of studying our methods. After more than a decade of discrimination against our meats, these countries have awakened to the fact that they have neglected their own business, that they are sadly in need of a general housecleaning, and they turn to us to show them how to do it. Such action is, to say the least, gratifying to those who have contributed to make the conditions what they are here.

The first meat inspection law was passed by Congress in 1890, and was intended primarily to protect our packing industries from foreign discrimination. It provided only for the inspection of meats for exportation, and was created because certain foreign countries opposed the admission of our meats from the alleged fear that they might be the conveyers of

Digitized by Google

disease. Under this law all persons engaged in the exportation of meat or meat food products were required to apply to the Department of Agriculture for inspection. Such inspection took place where the meats were packed for shipment and really guaranteed only that the products were properly packed and apparently wholesome at the time of shipment. No provision was made for inspection at the time of slaughter and therefore no guarantee could be given that the animals from which the meat was cut were free from disease. For this reason foreign countries refused to recognize our inspection certificates or to remove the prohibition maintained against our meats.

Meanwhile the public at large had become interested in the subject and a demand for more adequate inspection became universal, so that in 1891 Congress passed an act providing for the inspection of live cattle and hogs, the carcasses and products thereof which entered into interstate commerce, and under this law, with some modifications and improvements, inspection was maintained until 1906. While it left much to be desired, this law operated fairly well as far as our foreign trade was concerned, as Germany, who since 1880 had prohibited the importation of our pork products, removed the restrictions, and was soon followed by Denmark, France, Italy and Austria.

It provided for an ante- and post-mortem examination of all animals slaughtered for foreign or interstate trade, to be conducted by a qualified veterinarian, and for the condemnation of all animals found to be diseased. But right here was an opening as big as a barn door, for it was provided that any animal found on ante-mortem examination to be diseased should be removed from the premises and disposed of in accordance with the laws of the state and city in which the abattoir was situated, and this ruling also applied to carcasses found unfit for food on post-mortem inspection. As the state and municipal laws were then as now none too strict and not well enforced, it was possible for such meat in many instances to be disposed of to the local trade. Also under this law, although the farce of microscopic inspection of pork for trichinæ was conducted to satisfy Germany, there was no provision made for the continued inspection of the meat after it had left the killing beds during its processing and packing, nor was there any provision for sanitary regulations.

Altogether it was a rather one-sided and unsatisfactory law, and the wonder is, not that conditions were such as shown by the disclosures and agitation of 1906, but that under the circumstances and with the limitations imposed the Bureau of Animal Industry had been able to keep our meat food products up to so good a standard.

The agitation of 1906 is so recent an occurrence and so widely circulated that I hardly need refer to it in detail. In justice to all concerned, however, I must say that nothing was developed not previously known to the department, and no evil condition disclosed which the department had not for years by legislative and other methods tried to remedy. On the other

Digitized by Google

hand, many conditions were enlarged and exaggerated out of all proportion, and from the experience engendered by an intimate connection with the packing industry since I was fifteen years old I must say that conditions at that time were steadily improving, and that much of the agitation was caused by people with no practical knowledge of the business and by the ever-present demagogue.

However, the good it accomplished was out of proportion to its cause, for it resulted in the law of June 30, 1906, which placed our meat inspection service at the head of the world.

It will be remembered that the unsatisfactory conditions exposed at that time related almost wholly to canned and processed meats and to the unsanitary conditions of the packing-houses; conditions over which the department had no control. The act of June 30, 1906, extended inspection to cover not only the live animals before slaughter and the carcasses immediately after, but to all meat and meat food products in all stages of preparation and packing; it prevented the use of harmful preservatives and misleading labels, and required sanitary surroundings and methods.

Under this law no meats or meat food products can enter into interstate or foreign commerce unless they bear the meat inspection marks, with two exceptions to which I will refer later; meat slaughtered by a farmer on the farm, and meat shipped by retail butchers and dealers to their customers. Therefore a firm or person desiring to engage in such trade must apply to the secretary of agriculture for Federal inspection.

Before this is granted the packing-house must be made to meet the requirements of the department regarding sanitation. It must be equipped with a sufficient number of dressing rooms, toilet rooms, urinals and lavatories, with all modern facilities, running water, soap, towels, etc., and these rooms must be properly ventilated and lighted. All rooms used in the preparation of meat and meat food products must be well lighted and ventilated, and so constructed that they may be at all times kept in a clean and sanitary condition. Cleanliness and sanitation is required in all parts of the plant and premises whether used or not, sewer connections properly trapped are necessary, the feeding of hogs on slaughter offal on the premises is forbidden; in fact, any condition or usage incompatible with proper sanitation is prohibited.

If the requirements are met inspection is granted, the house is given an official number by which both it and its products are thereafter known and an inspector assigned to take charge of the work conducted there with as many assistants as are necessary to conduct the inspection in a proper manner.

The slaughtering and different steps in processing are carefully supervised and all products of the establishment, providing they are wholesome and fit for food, are stamped with the legend, "U. S. Inspected and Passed," and the official number of the establishment. Any animals which on ante- or post-mortem examination prove to be unfit for food, and any

Digitized by Google

product which in the course of processing becomes so, are condemned by the inspector and rendered into an inedible product under his supervision. As the packing-house cannot be operated in the absence of the inspector and the high standard of sanitation required to have inspection inaugurated must at all times be maintained, you may be sure that wherever you see the Federal inspection label you will find clean and healthy meat.

The meat of any animal slaughtered by a farmer on the farm is free from inspection. Such meat may be accepted by a common carrier for interstate shipment providing it is accompanied by a certificate in duplicate bearing the name and address of the consignor and consignee, describing the meat, and certifying that it is farm dressed and wholesome and fit for food. The original certificate is forwarded by the common carrier to Washington and the duplicate filed for reference. While such meats are exempt from inspection they must be prepared under sanitary conditions and be wholesome and fit for food. Any violation of the latter requirement is punishable with a thousand dollar fine.

A retail dealer or butcher who desires to ship in interstate trade must apply to the secretary of agriculture for permission. If his establishment complies with the sanitary regulations he is granted a certificate of exemption permitting him to ship for a year without Federal inspection other than that given his place from time to time to see that it is maintained in a cleanly condition. He is given a number under which all shipments must be made, and must file with the common carrier a certificate in duplicate somewhat similar to that used by the farmer. He must guarantee to confine his shipments of processed meats strictly to consumers and to abide by the regulations of the department pertaining to the use of preservatives, etc.

Now anybody would think that with all these restrictions a person would be reasonably sure of getting good meat from his butcher when he ordered it, would he not? And yet is this the case?

Take this town, for instance. You call up your butcher and order beefsteak, and if he runs a first-class shop you will probably get Western dressed beef, U. S. inspected. You ask him for pork chops and you will undoubtedly get pork dressed in South Burlington or some other surrounding town, without inspection and under conditions such as I will shortly describe. Gentlemen, that is the weak spot in our system. The Federal government can guarantee that our exports are all right, she can guarantee that our interstate shipments are all right, and can guarantee that anything that bears her inspection label is all right, but she cannot safeguard us from the dangers at home. Isn't it a pity? The Federal government is protecting you as far as it can, but it cannot interfere in intrastate trade. Now I want to tell you what the conditions are in this state.

When I took charge here there were in the neighborhood of ninety persons operating in Vermont under certificates of exemption. In the rush of constructing the inspection system in the fall of 1906 these people had

Digitized by Google

been granted exemption without the preliminary inspection of sanitation and it fell to me to visit them for the first time. With the exception of a few markets which conduct no slaughtering I found universal disregard for common cleanliness.

In one place the slaughtering was done in a barn basement, filthy beyond description. Along one side of this place were the cow stanchions, on the other a vile-smelling hogpen, and beyond a pile of manure and other filth. Between the cows and the hogs, running so close that by stretching out one's arms from the center in either direction one could touch them, ran the beam on which the carcasses were dressed. The floor was of dirt and saturated with the accumulation of blood and filth; as the viscera was removed it was tossed into the hogpen, where it lay partly eaten, putrid and fly covered. There was no water about the place with which to wash the carcasses, and yet out of that filthy hole between twelve and fifteen calves a week were being shipped to Boston, besides what was disposed of in the neighboring town. That gentleman is no longer doing an interstate business; whether or not he still supplies the markets of St. Albans I don't know. I am glad to say that this was the worst place I found; in fact, it couldn't have been any worse possibly, unless the owner had decided to kill directly within the hogpen.

However, the others were all bad enough. Usually my nose would tell me where the slaughter-house was before the driver pointed it out to me. As a rule they were devoid of running water and had no pretence of drainage. In nearly every instance the viscera, blood, heads, etc., were fed directly to a drove of hogs, either kept beneath the slaughter-house or directly connected with it; most of them were absolutely filthy, and had no equipment for the sanitary dressing of meat. Not more than ten of the number had a separate compartment in which the carcasses could be hung to cool or kept from the flies which infest such places. In one place the animals were dressed, the hides were packed and the lard was rendered and packed all in one compartment not over twelve feet square.

I found one man who had quite a select trade, composed mostly of summer visitors who on their return to the city paid him an extra price for his supposedly superior home-cured hams, country pork sausage, and home-rendered lard. His sausage and lard were prepared in a disgustingly filthy store basement, devoid of water, so dark that the work had to be conducted by artificial light, and without ventilation. So superior to packing-house products, you know!

Now if it were only the exempted places that were in this condition, and these exempted places desired to continue in interstate trade, it would not be so bad. We simply revoked the exemption certificates of such places until such time as they were in good condition, and now we are making them keep in that condition. But unfortunately a good many had so little interstate trade that they relinquished their exemption rather than make the necessary changes and confined themselves to a local business.

Digitized by Google

Add to these possibly a hundred or two more slaughter-houses equally as bad which never did any but a local business, and you can form a pretty fair estimate of where your native dressed meat is coming from and under what conditions it is being dressed.

Now, gentlemen, we can't help you. It is up to the state of Vermont to see that these conditions are changed, and it is up to you gentlemen, as men best qualified to do so, to take the matter up and see that the state of Vermont does change them. Our meat inspection laws can never be complete until every state and every municipality supplements them with local inspection laws and enforces them. Already some of the larger states are falling into line, notably Pennsylvania, whose state inspection system is a model. Every week I read of one or more cities which have perfected local inspection, especially throughout the Middle West, and yet this state, priding herself on her home-cured products; this state, where control of slaughter-houses is needed as badly as in any part of the country, does nothing. Gentlemen, what are you going to do about it?

It is a prevailing belief, and a mistaken one, that a sanitary slaughter-house is necessarily a costly one. Two primary requisites are necessary to a sanitary country slaughter-house, a good supply of running water and good drainage. Given these, the rest is easy. An eminent politician—I can hardly call him a statesman—in criticising my work not long ago, said, "You cannot expect a country slaughter-house to have the improvements and equipment of a modern packing-house," and I agreed with him, for one would be foolish to expect it. But when he went on to say that it is not necessary to have running water I immediately concluded that something besides his own common sense prompted the assertion.

I have a great many times had it said to me, "I can carry the water in pails and keep just as clean as with running water." Granted; one can but one won't. It is foolish to believe that any man is going to work on a slaughter bed all day and then carry forty or fifty pails of water to clean up with. He will not do it. And there is yet another question to be considered. How often have I seen water with which to wash carcasses brought from a well so situated that it received all the drainage from the barns, barnyard and slaughter-house. It is not edifying to think that one's dinner has been washed in a more or less concentrated solution of sewage.

Now given the water, it is of no material consequence what kind of a building is used for a slaughter-house. It may be constructed with side walls of cement, it may be sheathed, or simply finished with rough boards. The former is perhaps as cheap in the end and is more easy to keep clean; sheathing is perhaps preferable to rough boards, as it presents a smoother surface, but a rough finish may be kept as sanitary as either of the others by frequent washings and plenty of whitewash.

However, one thing there must be, and that is a good tight bed connected with a properly constructed drain. Personally I prefer, for a small place, a cement bed, but many prefer one of double matched pine laid on a tarred

Digitized by Google

surface. The material is not essential so long as it will not permit of an accumulation of filth beneath.

The bed should be so constructed that it has a decided pitch toward the drain. I prefer one with the floor pitched toward a gutter in the center, and with a general decline of the whole bed toward the main drain at one end. A floor so constructed will permit of all waste water, blood and other filth being flushed away from the building.

Each slaughter-house should have a cooler, or if the meat is not permitted to remain there for any length of time, a screened compartment into which the carcass may be run directly after dressing. A separate room should also be constructed in which to pack hides. No hogs should be permitted around the building, nor should any offal be allowed to accumulate in or around it. The viscera, heads and feet should be removed from the premises at the finish of each day's work. So you see that a fair amount of labor and a small amount of money would serve to make the country slaughter-houses of this state clean, wholesome places instead of the filthy holes so many of them are, and this fact makes it all the more discreditable that they are in their present condition.

So much for the slaughter-houses. In condemning them do not hastily condemn the men who operate them. The majority of them mean well. They kill under these conditions because their fathers and their father's fathers before them did so, and they simply require to be educated up to a higher standard. Nothing is more gratifying to me than to have some man, who perhaps most bitterly opposed the necessary changes, tell me now that they are completed, "Well, I'm glad you made me do it."

But there is another class, and by no means a small one, operating in this and other states; men closely allied to the string butcher and bob-veal jobber, who, devoid of all conscience, will not only market unclean meat, but will not hesitate to sell unwholesome and diseased meat if the chance occurs. I have had related to me from good authority instances of this kind that are absolutely sickening. I will not repeat them here, as I do not wish to state anything for which I cannot personally vouch.

But I have myself seen calves cut up and sold across the counter so young that their little bones were almost cartilaginous. Less than a month ago my assistant saw one of these men in the act of delivering to a market a calf which was but a few days old. Unfortunately he was not able to get in communication with the proper authorities in time to make a seizure, but he overstepped his authority and prevented the delivery at least for the time being.

A little over a year ago a boned carcass of beef—by that I mean the frame from which the meat had been removed—was received at a rendering plant. The costal pleura showed tuberculous nodules so extensive that the case was traced back and the fact disclosed that the meat had been trimmed off because the carcass was too badly affected with tuberculosis to permit its being disposed of as a whole, and that the meat was to have

Digitized by Google

been used for sausage meat. For certain reasons the meat was destroyed and nothing further done about the case.

I have personally seen exposed for sale a carcass showing a well-developed case of jaundice. I have seen hogs exposed for sale showing hog cholera lesions so extensive as to render the carcass unfit for food. With conditions such as these is not state supervision of the meat industry an absolute necessity?

Apart from those cases, which may be detected in the dressed carcass by close observation, it is possible in many instances to remove all trace of the disease at the time of slaughter.

If you see a carcass which on the inner rib side shows a rough surface which on the application of moisture does not present the glistening appearance of a serous surface you may well be suspicious. Such a condition is caused by what is known as stripping, or removing the parietal pleura. This may have been done because chronic pleuritic adhesions rendered the carcass unsightly, it may have been removed from one or two other causes, but nine times out of ten it has been removed to destroy the evidence of tuberculous infection. Likewise if you see a carcass from which the skirt or diaphragm has been removed you are justified in examining further, for it has almost always been removed for the same reason. If you simply have the forequarter your examination is necessarily limited to the pre-scapular gland. If you have the whole carcass your examination should be extended to the sub-lumbar, superficial and deep inguinals, popliteal and precrural glands. Under the circumstances, any infection of these body glands warrants a condemnation of the carcass.

In hogs the cervical glands are frequently the seat of a localized tuberculous infection. These glands are easy to reach and should always be examined. If found infected and the rest of the body free from lesions the head should be condemned and removed from the body close up to the shoulders.

Jaundice is by no means rare. It is, however, possible to confound it with the natural yellow color of some animals. The easiest way that I know of to differentiate is by the examination of the adrenal gland. In jaundice this gland is always affected, in a normal yellow color it never is.

You are probably all familiar with the cutaneous lesions of hog cholera. They may be confounded with certain purely local skin diseases, and I have seen them confounded with lesions caused by improper scalding and scraping. However, a carcass affected with the disease should not be condemned unless the lesions are well marked and progressive and have extended to two or more organs, so that further examination of any case would dissipate any confusion, as the well-defined ecchymotic spots in connection with the skin lesions would remove all doubt. If the carcass has been dressed and the viscera removed so that it cannot be examined, extensive lesions of the skin and bones, skin and kidneys, skin and

Digitized by Google

lymphatics, or any such combination, are sufficient cause for condemnation. However, well-nourished carcasses with slight lesions should not be condemned.

Actinomycosis or lumpy jaw is very prevalent here. As it is almost always confined to the primary area of infection in the head, it will probably never be met with by you in the dressed carcass. However, it is not at all rare to find beef tongues affected with it, and they should be condemned. On section the lesions show the characteristic yellow or white granular of the ray fungus, so it cannot very well be mistaken for anything else.

It is not necessary for me to go into the question of immature veal. Your law specifically states that a calf must be four weeks old and dress fifty pounds, and while you may go astray on the age you may rest assured that no unwholesome immature calf will dress up to the required standard. Therefore you are safe in following the law.

These are the principal diseases and conditions with which you are liable to come in contact. There are very many other pathological changes to be found in Eastern carcasses which render them unfit for food, but they must be looked for on the killing floor and are therefore not of interest to you. I have not gone into the subject deeply, preferring to confine myself to a few suggestions which may prove useful to you at some time. If there is anything more which I am able to tell you, I shall be pleased to do so.

In conclusion, I wish to repeat and emphasize the fact that it is our duty, gentlemen, yours and mine, to do all we can to further and promote any measures looking toward adequate meat inspection in this state. In the performance of my duty I have been accused of everything from overstepping my authority to favoring the beef trust, and so will you. Well, under the circumstances I would rather be called names than be patted on the back and called a good fellow for keeping my eyes shut. It has recently been said to me that it would mean the political death of any man who introduced such measures at Montpelier. All I can say is that I am looking for men who are not afraid to die in a good cause, and because they are not afraid they shall not die, but conquer.

DISCUSSION.

Dr. C. F. Ball, Rutland.

I feel it will be impossible for me to add anything to what has already been said on this subject, as Dr. Brock has covered the ground in a very thorough, able and interesting manner.

He has gone into the rules and regulations of interstate trade. I will take up the subject as I have really found it in my vicinity—Rutland—and since coming here, I have made it a point to see how the Burlington slaughter-houses compare with those of Rutland.

As Dr. Brock has said, he cannot touch any of the slaughter-houses except those that are selling some or all of their products to people outside

Digitized by Google

of the state of Vermont. A man who conducts his business in Vermont, selling from one town to another, does not come under his jurisdiction. Then the question is, Under whose jurisdiction does he come? It appears that he does not come under anybody's jurisdiction because there is no inspection in Vermont. The truth is, we health officers are not inspecting our slaughter-houses as we should. I do not believe many of the health officers are doing this inspection, because if you are, why do we find what we do when we go out into the country? Why do we find the so-called slaughter-house in the barn or hogpen? The trouble is we are not doing our duty in this respect.

I was interested enough in the subject to go around the vicinity of Rutland and find out what was being done; when I got up here, I went about to see what others were doing and I have reached the conclusion that none of us are doing anything. Now, we must get to work. There is one law in the state that has handicapped us a little. Every farmer has the privilege of selling his own produce, whatever it may be. It may be he raises vegetables; it may be he raises cattle, or hogs; but whatever he raises, he has the privilege of selling the same. We as health officers can not go out and tell the owner of a slaughter-house in an adjoining town how he shall keep his beef. We must take our meat and inspect it after it is dressed and in the market under our jurisdiction. I wish to relate a little instance in regard to this matter. A hog had been dressed in one of our principal slaughter-houses. The one who slaughtered the animal must have known there was something the matter with the creature. After she was dressed, she was sold to one of our good, reliable meat markets. It went through the slaughter-house and came to the butcher. He had the animal cut up and was making up his orders and had at least six or eight baskets full of meat and had gotten to the kidneys. He did not like the looks of them so he telephoned for me. I went over and found a nasty condition of affairs. It least a pint of pus was found in each kidney; one was a little in excess. The lower end of the right kidney had a very large nodule. Never having heard anything else but tuberculosis, I told him it was probably tuberculosis. I condemned the carcass. I poured oil over it. I sent both kidneys to Dr. Stone at the state Laboratory and he reported, "probably carcinoma." Now I don't know whether this is a very common thing or not. The tissue was very relaxed and flabby. It was nothing at all like the normal. This goes to show how little our slaughter-houses are inspected. Not having been a health officer very long, I had not paid very much attention to this matter, but that was a concrete example which convinced me that we are not paying the attention to slaughter-houses which we should.

What should constitute a well-kept slaughter-house? The rendering plant here is a fair slaughter-house and is kept up very nicely. I would suggest that any of you who can find the time, go and look this plant over. You will then see what *can be done*. In the few slaughter-houses which

Digitized by Google

I have examined, the cooling of the creature does not enter into the minds of the proprietors. Beef should be cooled off rapidly. Few of our slaughter-houses are making any effort to properly cool their meat. The slaughter-houses down my way are not fitted up with any running water. You can pick them out by driving along the roads. They are offensive places of work at the best, but they can be kept in better shape, and be much less offensive.

The matter of feeding refuse to swine. Dr. Holton sent me a pamphlet on the feeding of such material to swine. I had supposed that the practice of feeding this to the swine was the matter in point to be eliminated, but the point to be overcome is that it isn't so much the feeding to the swine as it is feeding in conjunction with the slaughter-house. They say you can move the pigpen away from the slaughter-house and then feed it to them. I really do not think it should be fed to swine at all. I have been too rigid, if that is the case, in refusing the right of feeding the refuse to swine. The fly is a great carrier of disease. He may eat of diseased material and become dangerous, contract disease and pass it on to some human being. Flies feed on human sputum containing tubercle bacilli and pass the organism on in their droppings. When such things are left around for flies to eat, it urges us to be more careful in the inspection of slaughter-houses.

Dr. W. H. Ranks, Shelburne.

It seems to me as a health officer the question uppermost is, What are we going to do when we get home to remedy the conditions in our slaughter-houses? Up to two years ago, the rules of the State Board of Health held that the health officer should make an annual inspection of our slaughtering places and no one could conduct a slaughter-house unless he had a permit from the local Board of Health. I want to thank Dr. Brock for starting the ball rolling in our town—Shelburne.

The first point to be brought out is with regard to bob veal. We have had that subject brought quite noticably to our attention and I will tell you of my experience in this line. We have four or five men in the business in Shelburne and they were shipping anything from two days old to four weeks old. Their buildings were unsanitary; they had kept swine always in the slaughter bed. They had no running water, and they were filthy. After the State Board of Health issued these pamphlets and sent them out to the health officers, I made it my business to inquire into the condition down there. I first talked the matter over with my selectmen. They said they would have nothing whatever to do with it. They said they did not think the State Board of Health could make any man erect a new building or remove an old one, and the public was against the enforcement of the rules. I went ahead with what I thought was my duty and what was right. I went to a relative and told him he would have to remove the hogpens. I told him he could not keep the swine there in the vicinity of the slaughter-house. I urged him to do what was right and

Digitized by Google

suggested what a lawful slaughter-house required. After a little he erected one three hundred feet from the highway with a solid stone foundation of concrete. They dug a good well for the purpose of having running water. Then one of our local butchers, one of my best friends, had his establishment condemned and there was great agitation in the town about the event. I said, You have got to do something to retain your business. He hung back and corresponded with Washington, and finally he concluded to take my advice and put up a slaughtering place which is number one in every respect. I went to another person doing a large hog business and on my advice they have built a modern plant. I made lots of enemies at the time, but to-day they are my friends. We have three slaughter-houses in Shelburne which are a credit to the town and to the state of Vermont. What I have done there, every other health officer in the state can do if he will put his shoulder to the wheel. I have seen bob veal a week old that would dress fifty pounds. One thing I would like to say about the local Boards of Health and that is, I have found it very difficult to get the selectmen together as a local Board of Health. They do not care to do anything to help out the health officers. They asked me, when I spoke to them about rebuilding, if these rules and regulations issued by the State Board of Health were made for the town of Shelburne especially. They told me that in the adjoining towns the men were doing the slaughtering in places which were unsanitary and that the health officers of those different towns said it was all right, and they said if it was all right for the others, it should be all right for them. Of course, that made it just so much harder for me, but I am proud to say that there was accomplished a great deal and our slaughter places are in first-class condition. I suppose we are obliged to inspect creameries. And it seems to be that certainly something should be done to regulate these creameries. The milk, cream and butter from these establishments are going into our homes and the homes of the inhabitants of New York and nearby New England states, and is being fed to the young as well; and it seems to me it is very important and very essential that we have sanitary buildings for our milk supplies. The butter is consumed in the raw state and partaken of in large quantities and I think the creameries should be looked into and rules and regulations established regarding their sanitary condition.

C. M. Campbell.

Being health officer from one of our country towns, like what the most of you represent, I think perhaps my experience may be of help to some of you.

As Dr. Brock has said, we have nothing but Federal inspection of meat in this state and there is an opportunity therefore for the local marketing of diseased meat. My community is protected in a certain measure inasmuch as the local butcher advertises to buy meat at the seller's risk—and therefore he loses nothing if the animal proves to be diseased.

Digitized by Google

A year ago our slaughter-house was in a condition similar to what has been described here to-day and was condemned.

To-day we have a sanitary building such as any town or butcher in the state can afford. A cement floor and sides over a wooden framework. Running water and good drainage are essential features. The cost of such a building fitted in the manner described is not large—one hundred dollars or less.

Dr. Clark.

Do you allow the offal to run into the stream?

Dr. Campbell.

No, sir. The offal is carted away several rods, where it is fed. The water that is used to cleanse the floor drains into the brook, but I do not consider the contamination any worse than what comes from sewers.

It seems to me that it would be well if our butchers were licensed either by the State or local Board of Health.

Mr. Piper, Panton.

With reference to the feeding of the offal to swine. Some one said it was not advisable to do so, but I had always supposed that healthy offal was perfectly legitimate food for swine. I would like to hear from some one regarding this matter.

Then some one spoke regarding the license for the slaughtering of beef. In my town it is customary for the farmer to slaughter his own beef and take it to the local market. They slaughter only one or two creatures in the course of the year and in that case it would be just as necessary, I suppose, to have a license issued for the slaughter of the two as it would if he slaughtered a hundred. To me, however, that does not seem quite fair. I would like to hear something on this point also.

Dr. E. E. Whitaker, Newport.

Would a health officer of one town have any right to inspect a slaughter-house located in an adjoining town where the meat used in his town was slaughtered and prepared for sale?

Answer. A health officer has no authority outside of his town.

Dr. Frederick Fletcher, Bradford.

Is each order of meat shipped from Chicago, marked with the seal of the Federal government?

Answer. Yes.

Dr. Henry D. Holton.

This board has very little control over the slaughter-houses. The local

Digitized by Google

boards have control of all nuisances. We have issued a set of rules and regulations regarding slaughter-houses to be adopted by the local boards and you will note at the bottom it reads—by order of the local board of health—and there is a place for the health officer to sign.

Some one asked the question regarding the inspection of slaughter-houses furnishing provision to another town by the health officer of the town where the provision was sold. The health officer has jurisdiction only in his own town. He could consult, of course, with the health officer in the adjoining town where the meat was being slaughtered and through him give the slaughterer some advice.

With regard to the feeding of the offal to swine. We do not think that it ought to be fed to hogs. We have made the same order the Federal government has made. We cannot go much ahead of the United States government, hence say it should not be fed on the premises. It is taken away and fed to hogs at a distance. If hogs should feed on the offal of tubercular animals, they would be very apt to have tuberculosis; it certainly it is a very dangerous thing to do.

With regard to farmers slaughtering. The point is there is no law which can prevent a farmer from selling anything that he raises on his farm.

As soon as your town representative is elected this fall, see him and explain to him the condition of each town in the state. It is desirable that there should be a board of meat inspectors; there should be a chief inspector and he should appoint other inspectors to proceed with the work. We haven't any money to do these things and we have got to go to work carefully. I think there will be some bills drawn up regarding these matters which we want your representatives to support.

Discussion closed by Dr. Brock.

The question has been asked, "Is cancer found very often in the tissue of animals?" I would say that it is frequently found. Where there is any doubt as to the malignancy of the tumor when discovered by Federal inspection the carcass is held in cold storage until a laboratory examination can be made of the tissue and its nature determined.

Referring to the question asked in regard to feeding offal to hogs, I would say that the Federal regulations prohibit the feeding of offal on the premises of an exempted or inspected establishment. It is frequently difficult to determine just what is to be considered the premises of a country slaughter-house. I have considered that anything within three hundred feet of the slaughter-house should be so regarded and that the hogs should be removed from that area. Personally I do not believe that hogs should be fed slaughter offal at all, as it is a conveyer of disease in many instances.

In regard to the "bob veal" question. The laws of your state and the Federal regulations conflict on this point, the former saying that a calf

Digitized by Google

must be four weeks old and dress fifty pounds to be considered fit for food purposes, the latter requiring a calf to be three weeks of age and wholesome without any specified dressing weight. This difference has been a a source of more or less trouble and confusion, and I think that your requirements should be modified to meet those of the Federal government. While it is necessary to have some standard by which to be guided I personally do not believe in an age limit and certainly not in a weight limit. Whether or not a calf is fit for food must be left to the judgment of the inspector and his judgment must be based on a thorough knowledge. I have seen calves not three weeks old dress more than fifty pounds and I have seen calves more than four weeks old dress considerably less. I have seen calves which at four weeks of age were less developed, less nourished and less fit for food than others at eighteen days. A calf, for instance, from a poorly nourished heifer or an inbred milking strain will almost invariably be a poorer specimen at one month than short-horn plains-cow offspring at two weeks and a half. I believe that a well-nourished, white dressing calf with uncongested kidneys well surrounded with kidney fat, one which has shed the umbilical cord and on which the umbilicus has healed should be passed for food irrespective of age, and you will find a very great many of these within your age limit. As I said a few minutes ago no *unwholesome* immature calf will dress up to fifty pounds.

It was asked, "Who would be responsible to the government in a case where one party dressed an immature calf and sold it to a second party who shipped it interstate?" The person who makes the shipment would be responsible.

With regard to the marking of western dressed beef I would say that every carcass dressed under Federal inspection bears the U. S. Inspected stamp so placed as to cover the ordinary wholesale cuts.

It was asked, "What regulations should be made to cover a man who does not slaughter more than one animal a week? Should he be required to make the changes required of one doing a larger business?"

I have met with quite a few cases of this kind. You can not expect such a man to make the improvements required of the man who is dressing fifteen or twenty a week, although he must be required to conduct his slaughtering under sanitary conditions. In these cases I have suggested that when the weather permit the slaughtering should be done out doors. Let him go out into his orchard or open field and slaughter his beef; there is surely nothing cleaner, purer or more sanitary than fresh air and green grass. In weather which will not permit this I should not consider it unsanitary to dress on the barn floor if the place was clean, but you should understand that what can be permitted for one carcass a week cannot be permitted where a larger number are dressed, even if it were but three or four a week, for with any but the minimum amount of slaughtering you would soon have an unsanitary place.

Digitized by Google

IDEAL DAIRYING AND IDEAL MILK.

BY CHARLES HARRINGTON, M. D., SECRETARY MASSACHUSETTS STATE BOARD OF HEALTH.

To be invited to speak on "Ideal Dairying and Ideal Milk" in the state which is preëminent among the states as a center of advanced dairying is indeed a great compliment.

When I read the subject which had been assigned to me, I felt some doubt as to the interpretation which I should give to the word "ideal," since different persons and classes have different ideals. Ideal milk from the producer's standpoint would ordinarily be taken to be that which will bring him back the largest margin of profit, while to the purchaser of milk it would mean that which can be obtained at the least cost; but to the sanitarian it would mean that which is produced under such conditions as shall cause it to be most wholesome. As we here are all sanitarians, I shall speak from the last-mentioned point of view.

For a proper appreciation of the importance of a wholesome milk supply, it must be understood in the first place that however clean cow's milk may be, it is to the young infant stomach an unnatural food, since it differs materially in composition and properties from that secreted by the human mammary gland. It differs in the relative proportion of the several constituents, and it differs in respect of character of certain of the constituents, notably the proteids. No two species of mammalia yield the same kind of milk; however much resemblance there may be in color, consistency, taste and gross chemical composition, there are distinct differences in the character of the proteid substances, just as every kind of grain and every kind of vegetable has its own peculiar proteids.

Inasmuch as cow's milk is to this extent an unnatural food for young infants, and inasmuch as, however clean it may be, it may cause more or less digestive difficulties, the infant who is denied its natural food should be entitled to as harmless a substitute as possible, and the cleaner the substitute may be the better for the health of the infant.

But we know that no public milk supply is ideally clean and that everywhere that infants are fed extensively on market milk their death-rate is appalling. Unfortunately, but comparatively few countries record their vital statistics in a thoroughly satisfactory and complete manner, and, therefore we are denied exact knowledge of the vast extent of the slaughter of infant life that goes on in all parts of the world. The most complete statistics that I know are those of the German Empire and more particularly of the city of Berlin. In Germany, about one fifth of all the infants born perish before they reach the age of one year. Sometimes the death-rate is higher than one fifth and sometimes slightly lower. More often it is considerably higher than slightly lower than one fifth. The remarkably complete statistics kept by the city of Berlin show that in that

Digitized by Google

city more than 90 per cent of the deaths under one year of age are of bottle-fed children, and less than 10 per cent are breast-fed. Now it must be that a very large proportion of this more than 90 per cent die because of the character of the food which they receive; that is to say, they die not only because the milk is an unnatural food, but because it is a dirty and poisonous food. So it is everywhere; in every country and in every large city, the great majority of infant deaths are among those who are compelled to depend upon the cow.

How do we stand in this country regarding the waste of infant life? Because of the lack of reliable statistics, we cannot tell, excepting in the case of the few states that make up the registration area. We know about the waste of infant life only as it occurs in the New England states, New York, New Jersey, and the District of Columbia. Vermont, be it said, has a better record than any of the other New England states; better than New York; better than New Jersey, and better than the District of Columbia, and is surpassed only by one state, Michigan, and then only by a fraction of 1 per cent. Of every 1000 infants born in the District of Columbia, about 275 die before reaching their first year. Of every 1000 born in Rhode Island, about 200; in Massachusetts and New Hampshire, about 175; in New York, New Jersey and Connecticut, more than 150, and in Maine nearly 150; while Vermont shows that but 122 die; and that is the best record excepting that of Michigan, which is 121. What does this mean? To what is all this mortality due? To no one cause, but to many causes. We expect a high infant death-rate in crowded cities where the mothers are obliged to work and to leave their last-born offspring to the sole care of older children who have managed to escape the dangers of the first year. The high death-rate in Massachusetts and Rhode Island is largely due to the mortality in the mill cities where large numbers of married women are employed. The one immediate cause of the high infant death-rate which prevails everywhere (and in your own state it is not low enough—it could be reduced very markedly) is the denial of the breast and the substitution of the cow.

As I have already said, ideal dairying is not carried out anywhere as a general practice, not even in Denmark, which has an excellent reputation as a dairying country and where, on the whole, the conditions that obtain average better than in any other country. We hear a great deal of the movement in England for perfection in sanitary matters. I think it is the common idea in this country that in England all sanitation is perfect. England has more sanitary law than all of the United States put together. About one third of every book on hygiene written in England is taken up with sanitary law. Yet, the conditions that prevail in the dairies of England are, in general, abominable. The authorities are afraid to attack the subject as they ought to; they are afraid of hurting the feelings of the dairyman, just as is the case in other countries.

We are accustomed to look upon the Germans as models on sanitation.

Digitized by Google

We confuse scientific research with practical demonstration. The Germans are acknowledged leaders in many lines of sanitary investigation, but they do not always apply the knowledge which they have so laboriously acquired, to practical ends. In Germany, more than anywhere else, has been emphasized the importance of clean milk as a factor in keeping down infant mortality, and yet, that country has the highest rate in Europe, with the single exception of Russia, which country appears to be quite as unable as England to bring about proper conditions in the dairying industry. In Denmark, which has the reputation of having reduced the subject of dairying to a science, the conditions are far better than they are in England, Germany, France and this country, but they are by no means perfect. Taken by and large, their dairies are reasonably clean, but establishments which were shown to me as models are no better than may be seen here and there in many parts of New England, and far inferior to any of the model dairies which I have visited in this country where certified milk is produced. But, at least, it may be said that in Denmark it is the rule to be more decently clean.

In England, Germany and in our own states, what are the conditions which we find in the average dairy? We find more often than not the following: We find cows that are not over clean and stables that are far from it. With regard to the milkers, neither in person nor clothing are they sufficiently clean. We find other animals kept in the same place, without any partitions to separate them. We find hay overhead, and every facility for raising dust. Manure is piled back of the cows, and pans and milk pails stand about receiving all kinds of dust. What sort of milk do we get from this sort of a condition? We start with the pail which is not sterile, but is lined with dust; it is taken in hand by a man not over clean, who sits down to the cow whose flanks and udder are caked with excrement. The tail in switching back and forth brings particles of dirt and dust with every movement. No matter how carefully the man milks, a number of hairs fall into the pail together with particles of excrement. Possibly he rejects the first few jets of the milk, knowing from experience that unless he does so the process of souring is likely to begin much earlier than otherwise. These few streams wash out thousands upon thousands of bacteria from the ducts of the teats; but it does not wash them all out, and although the milk as it is secreted and held in the milk cistern of the healthy udder is free from bacteria, yet when it passes through the teats it may take them up in very large numbers. Furthermore, milked into a pail which may appear clean to the eye but is in reality dirty, and during the somewhat violent manipulation of the udder becoming seeded with the bacteria which adhere to hair or are contained by thousands in each minute particle of excrement, it is no wonder that at the conclusion of the operation, every teaspoonful will contain thousands upon thousands of these minute organisms. It is of the very greatest importance that the multiplication of these bacteria should be prevented as much as possible by reducing the

Digitized by Google

temperature of the milk to 45° F. or lower, since warm temperatures favor bacterial multiplication.

In a large part of my own state, and perhaps in yours, the milk is allowed to "cool" in water that is fairly warm. Some dairymen feel that if they put the milk that has the temperature of the cow into a half barrel of water that has a temperature of 70° they are cooling it to a proper extent. In certain districts of this state, where an agent of the State Board of Health of my state made an examination to see under what conditoins milk was produced for our market, it was found that nearly every dairyman had no need of ice, because he had running water that was very cold; but the average dairyman who has no ice and is content to bring his milk down to a temperature of 68 or 70 degrees, according to the weather, is not so fortunate. We all know that unless milk is brought down to 45° F., in a very short time the bacteria which have been introduced into the milk have begun to multiply and the thousands to the teaspoonful have grown to millions. The farmer knows that this means a souring of the milk and an end of its value, so far as sale is concerned. Consequently, he is anxious to get the milk off his hands as soon as possible. The bacteria that cause souring are unfriendly to him, but they are otherwise to the consumer, because they terminate the commercial life of an article that is dirty and unfit for use in any event by causing a change in its consistency and taste, so as to make it nonusable. Milk which contains millions of bacteria to the teaspoonful contains the seeds of infant mortality—a mortality which is very largely preventable through the exercise of even moderate care. These bacteria, first of all, should not be allowed to gain access to the milk, and if they do become introduced, their growth and multiplication should be prevented by keeping the milk as cold as possible.

Why is it we see so much of what is commonly called "cholera infantum" in summer? It is because in summer it is more difficult to keep milk cold. In winter, under ordinary conditions, it keeps cold without anything being done to attain this object, until it reaches the home of the consumer. In summer, unless it has been properly cooled, it starts from the farm with a very high content of bacteria and gains many more while waiting at the railroad station to be placed in the milk car, and, in a very large proportion of cases, it is in the milk car that the product first comes in contact with a lower temperature; but then the mischief has been done.

If the dairyman could keep his milk as cold in summer as in winter, up to the time it reaches the consumer's house, we would not see this enormous increase in infantile mortality which comes with every summer. I want to quote you some figures regarding infant mortality during the summer months. I took off the number of deaths of children under one year of age in every city and town in Germany having a population of more than fifteen thousand. In January, 1905, in all of those places (and they make up the bulk of the German Empire), there were 1200 deaths under one year of age; in February, the number went up to 1300; in March, a little higher—

Digitized by Google

1450; in April, still more 1500; then nothing alarming until we get to May—1900—warm weather is at hand. In June, 3200; in July—hot weather—10,700. But this was not the highest figure reached, for we find in August 16,000. Then there was a drop in September to 6500, and in October to 5500. You will see as the warm weather comes on, that the upward curve is gradual until in July and August, it becomes almost a perpendicular line. To what is that mortality due? It is not directly due to the heat, but to the fact that in summer the food which the infants have to depend upon is seeded already when it leaves the barn, and through the favoring conditions of heat has become by the time it reaches the stomach, a poisonous substance which kills off those who cannot bear the ingestion of such matter. What is going on in Germany, is going on everywhere where large populations exist. We have no means of knowing in this country how many deaths there are in January or in August. We can only tell for individual cities where we make a special study. In Boston, during the six months beginning with the first of June last year, the curve ran along about the same as I have shown you. It was fairly high in June; it was very much higher in July and still higher in August, and then fell off again. You will find this true, I fancy, if you will study the records of your own state. It may be asked: What are you going to do about it? In Massachusetts we are trying to do something. Three years ago, the State Board of Health undertook an inspection of our dairies and a competent veterinarian was engaged for the purpose. He began his investigation in a district near Boston, and sent in his reports at the end of each day's work. The conditions found were far from commendable, but were about what were expected; but as he proceeded with the work, it became more or less noised about and many of those who had a proper pride in being reported upon favorably, anticipated his visit and put their premises and cows in proper condition. Frequently he reported that lime for whitewash was in great demand in towns adjoining those in which his work was being conducted, but in many places there was much indifference in this regard. Up to the present time, he has made nearly 10,000 examinations.

During the first year those that could be passed as fair or good were about 30 per cent. In the second year, it was a little over 30 per cent. The third year it came up to about 35 per cent. Unfortunately, in Massachusetts, the state Board of Health has absolutely no authority to enforce cleanliness in the dairies of any city or town in the state. The only authority that has any right to go into a man's dairy and say, "You keep clean and take better care of your cows," is the local board of health. The state board has no authority to compel the local board to do this, either, although it can advise.

The veterinarian makes his report from a certain town. We will say that one half are clean. The names of the owners of the clean dairies go into the next issue of the Monthly Bulletin, but to those who have foul conditions, letters are sent advising them that it would be better for all

Digitized by Google

concerned, better for themselves and better for the community, if they would adopt certain suggestions; for example: The cows are dirty, and they should be cleaned; the pigs should not be kept in the same part of the barn; the tie-up needs whitewashing; horse manure should not be used as bedding. At the same time a letter is sent to the local authorities requesting them to compel these people to better the conditions. If a local authority is not particularly interested, nothing is done. A majority of the producers who receive these communications do take some interest and try to clean up. Some say they are freeborn citizens and they can be dirty if they want to. It is more difficult somehow to deal with a man whose people have lived on the spot generation after generation, and if the local authority is not interested that ends the matter. The chairman of the local board has perhaps the dirtiest dairy in town, and it is very evident that he will not go around advising others to clean up when his place is in a nasty condition and is going to stay nasty.

In 1906, 3421 dairies were examined and 31 per cent were found clean and 69 per cent were found to have some objectionable feature. Those which were dirty averaged three to four objectionable conditions to the farm.

In 1907, we went outside of Massachusetts because Massachusetts requires milk from all the New England states and draws also from New York. Our inspector went into Maine, New Hampshire, Connecticut, Vermont, Rhode Island and New York. What did we find in Vermont? Taken as a whole, the dairies in this state, from which milk was shipped into Massachusetts, were in a far better condition than those of the other New England states or New York. One of the matters noted by our inspectors is the health of the cows and the amount of garget which he finds in any herd. When he reports a cow as being afflicted with tuberculosis, especially of the udder, or garget, the State Board of Health may act under the law relating to diseased milk, such being deemed to be adulterated. We have found a good many tubercular cows, and when they are found on the farm of a Massachusetts producer we send a note to the chief of the Cattle Bureau, who issues a warrant to his local veterinarian, who proceeds to the place, and if he finds the cow to be tubercular, he kills her and the owner receives compensation, but not more than $40 for any animal. If garget is found, the producer is warned that if he sends that milk into the market he will be fined for selling milk from a diseased cow. With regard to garget, this may interest you. In the November (1907) issue of the Monthly Bulletin of the State Board of Health facts were presented concerning certain of the sources of the milk supply of Massachusetts beyond the borders of the Commonwealth, and in speaking of Vermont dairies the report said: "The 1167 cows on the 85 farms furnish to the Boston market nearly 7000 quarts of milk daily. In point of general health, this average is very high. Not all of them were examined individually, but of the large number that were examined not one showed any evidence of disease and not an indurated udder was observed." That is the record of Vermont, and

Digitized by Google

it is one to be reasonably proud of. I suppose that the conditions which were found in the dairies examined obtain to a great extent throughout the state. I refrain from reading the report on certain other New England states. I already have received considerable literature from certain of them, after reporting on the conditions, stating that those conditions did not exist, although found there by our inspector.

I have told you how little real authority the State Board of Health has. It can act only in an advisory way, suggesting to the local boards that they exclude dirty milk from sale; and a number of our cities and towns have adopted rules and regulations bearing thereon which have all the force of law. The local authorities have the right to make regulations, which right is denied the state authority. The local authorities can make a law absolutely excluding from sale any milk from a place which is not kept up to a reasonable degree of cleanliness, and the city of Boston is constantly adding to its rules and intends to enforce them to a greater degree of strictness now that it has been found to be impossible to get at the evil through the legislature. At the last session of our legislature, something like eight or ten bills were introduced in the lower House concerning the legal standards of total solids and fats. These were referred to the committee on agriculture, which heard a great deal of evidence concerning the hardship wrought by the existing standards. They heard of the difficulties with which the dairymen have to deal; and they heard about the conditions under which some of the milk is produced and especially in the neighboring states. Without a suggestion from the health authorities of Massachusetts, the committee on agriculture, made up largely of farmers, presented a bill which recognized the necessity of state supervision of the milk business. This bill gave to the State Board of Health the right to make rules and regulations under which milk should be produced if it was to be offered for sale. The regulations having been made, the State Board of Health would communicate with the local boards and they in turn with the producers, and any man who proceeded to sell milk produced in violation of the regulations would be fined. The bill passed the Senate without real opposition, and went into the House, where it was slaughtered. The House had not learned of the importance of clean milk and there were only nineteen men who voted for it. Since that time the Massachusetts Medical Society has passed resolutions to make it known to prospective members of the legislature how important this matter is. Whether this is going to have any influence remains to be seen. We hope the legislature will see the importance of saving infant life by compelling decent dairying.

It might be supposed that the United States government would act in this regard under the National Pure Food Law, but the United States is not particularly interested in the milk question. The Federal food officials are more interested in determining what constitutes whiskey and whether aniline dyes are harmful in ketchup; and when it comes to the milk question, they show no interest whatever. The definition of milk under the National

Digitized by Google

Pure Food Law is about as follows: "The clean, fresh product of a healthy cow." Anything that is not in accordance therewith is adulterated milk. Now, much of what is sent into Massachusetts from neighboring states is not pure milk within the meaning of the law, but is adulterated, because it is the stale, dirty product of diseased cows; and on that score I attempted to induce the Washington authorities to exclude the milk of certain dairies, but without results. It took six months of correspondence to find that nothing would be done because of a lact of inspectors, or of appropriation, but it seemed to me because of a lack of interest in the subject, which affords no such opportunities for spectacular effects as the seizure of a car of Durum wheat or a dozen barrels of blended whiskey.

Educate the public to the importance of requiring of the producer that he shall conduct his business in a proper manner, and then you will get what I consider a perfectly safe milk supply. In this country we are hearing a great deal said about race suicide. I think we might take up a much more important subject than race suicide and that is race destruction or race salvation. It is of no benefit to this country to have double the number of births and lose half of the infants before they are one year old. Let us undertake to save those that we have. If we have a birth-rate of 25 and keep 24 of the infants alive, we are doing far better than if with a birth-rate of 35 we lose one third of them through improper feeding. With ideal dairying we are going to save thousands of lives that at the present time are sacrificed every year. Vermont is a dairying state and ought to take the lead in this great movement that is sure to succeed sooner or later.

DISCUSSION.

Dr. W. L. Havens, Chester Depot.

Who would have authority in the matter of the cans? I have seen cans at our own station which were too filthy to put milk in and send away.

Hyde.

What is the effect of this on butter? A large part of the milk from Vermont goes into butter.

Kingsbury.

I am interested in regard to the milk with garget. How is it best to take up that condition if the milk from a herd was condemned because it was found in the milk collectively rather than traced to an individual cow? In my experience, you will see indications of garget one day and then no evidence of it whatever, so that it seems to me that it would be arbitrary to condemn a cow's milk occasionally without the knowledge of the individual which might be producing the milk. It seems to me that that

Digitized by Google

condition should be traced to the single animal rather than condemn the entire herd.

Dr. Harrington.

I agree with Dr. Sprague with regard to the leucocyte count. It is when we get a large number of leucocytes and streptococci that we may expect trouble. In the routine examination of milk for its bacterial content, when a large number of streptococci and leucocytes are found in any one specimen, it is customary in Boston to determine from what source the milk was derived and then to send and get samples of the milk of the individual cows of the herd and in that way indicate to the producer which of the cows is at fault.

With regard to dirty cans, I agree that the farmer is not well treated in this matter. He cannot be expected with the small margin of profit which he gets to spend his days working on the farm and his nights scouring cans. It was very early in the course of the work which we have been conducting that complaints came to this effect: "If you are going to try to make us keep clean, I wish you could see some of the cans we have returned to us. I wish you would make the contractors keep their cans clean." I have seen some of the cans that go back into the country in a filthy condition. It is not wholly the milk contractors' fault; in Boston the contractors do a very large business with shops and restaurants and it was their custom to leave three or four or up to fifty cans at these shops to supply their needs. It was the shopkeeper who would misuse the cans. If kerosene was needed, a milk can was sent out for it. Cans were used as swill containers. If the cook was making squash pie, the can might be used as a vessel in which to mix the ingredients. In fact, anything could be put into them. Seeing the conditions, I introduced into our legislature what is known as the clean milk can bill, which provides a penalty of $10 for each can that is misused. It prohibits the putting into the can or milk bottle any substance other than milk or cream or water and cleaning agents. It specifically forbids their use for garbage or refuse. It is not stated in the law that the contractor must wash the cans. It forbids his sending back foul cans, but it can't compel him to send back clean cans. The contractors, however, charge a fraction for cleaning the cans. In order to prevent the misuse of the cans in shops, etc., one section reads that the dealer must sell from his own cans. The contractors can pour the milk from the can supplied them into the dealers' cans and any one found using a can belonging to another can be fined $10 for each can so used. If any of you will visit the office of the Bureau of Milk Inspection in Boston, I think Mr. Jordan can show you a can representing every kind of filth that can be put into one. It has been truly said that the milk producer is not to blame for the conditions. He is to blame for being dirty himself and allowing his cows to be dirty, but he is not to blame for not being willing to sell the milk at such a small profit and then clean up the

Digitized by Google

filthy cans. I don't blame the dairyman for declining to supply a lot of clean raiment each day for his milkers, but he can be clean and neat in all his methods.

I am not able to give the per cent of garget which can be attributed to tuberculosis as a cause, and I doubt that anybody can do so. Milk that is exposed to bad smells will absorb them to some extent, and the flavor will be retained in the butter that is made from it. Milk which is filthy or of foul flavor will make second-class butter. In some parts of Europe it is the custom to expose butter to flowers of various kinds in order that it may absorb the delicate flavors. Butter will absorb foul odors as well as pleasant ones.

Dr. Holton.

In speaking about the matter of milk cans: We have practically the same law here in Vermont—the cans must be kept clean. In three instances I have had my attention called to the cans returned from Boston which were in a filthy condition. I wrote them that if it occurred again, prosecutions would be made against their agent. They wrote back a nice letter and said they would try to take care of them. We have this law and it is for you to call the attention of others to it and see that the cans are made clean. You as health officers have the right to see to it.

Arthur Morton, St. Albans.

To obtain a good, wholesome milk supply is to me one of the most important questions with which preventive medicine has to deal. The question is in a great part simply one of education. The farmer must be taught how and why he ought to produce a clean milk, and one that is free from disease-producing organisms. He should be taught the necessity of keeping his stables and cows clean, of having a pure water supply and of insisting on his employees being absolutely clean in regard to milking, and that they be free from all forms of communicable disease. He should be instructed in the choice of foods for his cows, and the proper time at which they should be fed, also in the method of cooling and keeping the milk cool until delivered to the milk dealer or consumer.

The milk dealer should be instructed in the best way of delivering the milk cool and clean to his customers.

The bottle method is, in my opinion, by far the best. This was adopted a few years ago by some of the milk dealers of St. Albans, but after a while was given up for the old can and quart measure method. Upon inquiry as to the cause I found that the milkmen thought the method too expensive on account of the loss due to breakage and losing the bottles, and that their customers did not seem to appreciate it, some objecting to it on the ground that the milk might be delivered to them in bottles which the day before had been in the "blocks."

Digitized by Google

If the bottled method of delivery is used, great care must be observed by the dealer in properly sterilizing the bottles. The use of the bottles for any other purpose by the consumer should be prohibited by law.

A somewhat cheaper and nearly as hygienic method of delivery is in use in Copenhagen. Here the milk for general consumption is not bottled, but is delivered ice cold at the door in wagons, the doors of which are locked and the milk drawn off by means of faucets. This renders it impossible to tamper with the milk, and also reduces the possibility of the milk becoming contaminated with the dust from the street. This method seems almost ideal, if a tin measure is not used to deliver the milk to the customer. The ordinary quart measure so frequently used by our milkmen is to my mind one of the chief sources of milk contamination, during its progress from the farm to the consumer.

The can and quart measure method of milk delivery is the least desirable. Watch the progress of the milk wagon on its daily round. As each new can is used the milk has to be mixed, or the first customer will get nearly all of the cream. This mixing is done by pouring the milk from one can to another. In doing this the milk is subjected to the dust from the street, with its countless number of organisms, or in wet weather to the mud, which is just as bad.

I have had specimens of milk brought me which contained pieces of mud as large as beans.

Next watch the quart measure. Here we have a nice wet surface which in windy weather is just the suitable place for the dust from the street to lodge. In wet weather the measure makes a very good receptacle to catch the drippings from the milkman's clothing. At each house this measure is washed out with the delivered milk, so that the customer gets both milk and dirt.

The consumer has certain responsibilities in obtaining good milk. The milk should not be left standing on the doorstep for several hours before being put into the ice chest. The container should be absolutely clean and provided with a suitable cover.

The consumer should insist on having a fresh, clean milk from a healthy herd of cows, and know that the milk has been cooled directly after milking, and kept cool until delivered at the door.

If we are to have an ideal milk supply, the public must be educated to pay a fair price for this one great article of food.

There should be no unreasonable demand on the producer, which may cause him heavy losses, but by a gradual process of education, the milk supply should be improved and the public must expect to pay its portion of the advanced cost of production.

One of the chief facts that I have tried to impress on the milk dealers with whom I come in contact, is that if dirt once gets into the milk, no amount of straining can remove it or the effects on the milk.

The process of milking at the best is anything but hygienic, and I look

Digitized by Google

forward to the time when a milking machine will be perfected. This will, in my opinion, give us the nearest to an ideal milk.

Dr. L. P. Sprague, Burlington.

Dr. Harrington has covered this ground so thoroughly in his paper that there is little which I can add to it, so I will not attempt to do so.

The work of the State Board along this line has been fully discussed in the quarterly Bulletins. When we first examined the milk supplies, we found that only 26 per cent were clean. The last examinations showed 87 per cent to be clean. These figures show that we are at least trying to keep up with the other states as regards pure milk.

I will speak of the leucocyte content in milk, as we have done and are doing considerable work along this line at the Laboratory. If a physician finds an increased number of leucocytes in the blood of his patient, he knows he has an inflammatory condition. The question arose, Does not an increased number of leucocytes in a cow's milk indicate an inflammatory condition? It seemed fair to assume that it did, and following the lead of other board of health laboratories, we began to examine the leucocyte content of milk. All milk having a content of 500,000 per c. c. or over, was condemned. Although this standard was higher than that of most laboratories, the owners of the condemned herds did considerable kicking, so that we decided to investigate the matter thoroughly. The experimentation herd was placed at our disposal by Professor Beach. A leucocyte count was made of the blood and at the same time from a sample of milk from each cow, there being about sixty cows in the herd. We found there was a great variation in the leucocyte content of the milk; some of the apparently healthy cows giving milk containing over 500,000 leucocytes per c. c. At no one time, however, could we pick ten cows which would average more than 500,000 leucocytes per c. c. The animals which gave the high counts were examined by competent veterinarians and no lesions could be found. Of course an autopsy, which might have shown them, was impossible.

The investigation was carried further by selecting two healthy cows whose previous history gave no evidence of disease; samples of milk were taken from these cows as soon as the calves were dropped and twice every day up to the present time. The first samples were taken the 25th of last January. In this there is also a great variation. At a few milkings the count has been over 1,000,000 leucocytes per cubic centimeter and the following milking the count would drop to less than 500,000; the rise and fall being very abrupt with no apparent cause. These cows have been under the observation of a veterinarian and at no time has there been any apparent disease. It thus seems that healthy cows may give milk having a high leucocyte content and that boards of health should be careful in condemning milk for this reason alone. Not that the leucocyte count is of no value, for it is, in that it points out the herds to be examined at once.

Digitized by Google

A high count indicates disease and should lead to immediate examination of the herd. If garget or other inflammatory conditions are found, the milk should be condemned and the dealer prosecuted.

G. Smith of Manchester.

I have listened with a great deal of interest to the address that has been given us. There is one thing I want to say and that is, I don't think the farmer is altogether to blame for the poor milk that gets into the Boston market. A year ago my attention was called to some cans that came back from Boston to our town. My attention was called by one of the judges of the supreme court who was the owner of the dairy. I could not get there in time to inspect them before the cans were filled with milk, but I did investigate the matter and inspect the cans when I got there. I found they were pretty filthy. He told me those cans came back from Boston continually in this filthy condition. As I understand it, it is the business of the company that takes the milk to return those cans clean; that is the contract, but they do not do it. If I understand the situation correctly, this milk goes all over the city of Boston, to restaurants and other places, and when the cans are emptied they are filled with refuse and swill that comes from those places and is carted away. I smelt of those cans; the smell was almost unbearable. The cans had been scoured and scalded and everything that could be done to remedy the trouble had been done. Suppose you have one of the ideal farmers who keeps his cattle in the very best condition; his cows are perfectly healthy; and suppose you put the milk from his cows in those cans and it goes to Boston. Is the farmer to blame if this milk is bad? In this particular instance I know he is not, for this farmer is a very particular man. If there is anybody to blame for bad milk it is the people of Boston who purchase it from the farmers.

Digitized by Google

Medico Legal Cases.

Specimens Examined by Order of Superior Judge or the Attorney General, January 1, 1908, to September 1, 1908.

Laboratory Number	Date Received	Date Reported	Town	Material	Examined For	Result	Ordered By	State's Attorney
			Addison County					
59956	6-24-08	7-31-08	Orwell	Autopsy	Cause of death	Results pending	G. M. Powers	Le Roy Russell
59956	"	"	"	Organs	Poison	Negative	" "	" "
			Chittenden County					
59905	7- 8-08	7- 9-08	Burlington	Autopsy	Cause of death	Still-born	Seneca Hazelton	A. L. Sherman
54590	1-21-08	1-22-08	"	Beer	Alcohol	5.45 per cent vol	No order received	" "
			Franklin County					
54800	1-30-08	2-15-08	Swanton	Autopsy	Cause of death	Case pending in court	C. C. Fitts	F. S. Tupper
55800	"	"	"	Stomach	Poison	Negative	" "	" "
61219	8-24-08	8-26-08	St. Albans	Malt Extract	Alcoholic percentage	5.47 per cent by vol	A. A. Hall	" "
			Lamoille County					
57259	4-15-08	4-17-08	Stowe	Autopsy	Cause of death	Cancer of pylorus	C. C. Fitts	W. E. Tracy
			Orange County					
61126	8-19-08	8-24-08	Randolph	Beer	Alcoholic percentage	.66 per cent vol	C. C. Fitts	M. M. Wilson
61125	"	"	"	"	" "	.58 " " "	" "	" "
			Orleans County					
60500	7-27-08	8-20-08	Newport	Beer	Alcoholic percentage	Case pending in court	E. L. Waterman	E. C. Cook
60501	"	"	"	"	" "	" " "	" "	" "
60502	"	"	"	"	" "	" " "	" "	" "
60503	"	"	"	"	" "	" " "	" "	" "
60504	"	"	"	"	" "	" " "	" "	" "
60505	"	"	"	"	" "	" " "	" "	" "
60506	"	"	"	"	" "	" " "	" "	" "
60507	"	"	"	"	" "	" " "	" "	" "
60508	"	"	"	"	" "	" " "	" "	" "
60509	"	"	"	"	" "	" " "	" "	" "
60510	"	"	"	"	" "	" " "	" "	" "

Digitized by Google

Medico Legal Cases (Continued).

Laboratory Number	Date Received	Date Reported	Town	Material	Examined For	Result	Ordered By	State's Attorney
			Orleans County					
60511	7-27-08	8-20-08	Newport	Beer	Alcoholic percentage	Case pending in court	E. L. Waterman	E. C. Cook
60512	"	"	"	"	" "	" " "	" "	" "
60513	"	"	"	"	" "	" " "	" "	" "
			Rutland County					
60998	8-13-08	8-14-08	Fair Haven	Autopsy	Cause of death	Tuberculosis	C. C. Fitts	R. L. Lawrence
57875	5- 4-08	5-23-08	Proctor	Meat	Poison	Negative	W. H. Taylor	" "
57874	"	"	"	Stomach	"	"	" "	" "
60418	7-23-08	7-25-08	Rutland	Autopsy	Cause of death	Case pending in court	C. C. Fitts	" "
60418	"	"	"	Portion of scalp	Powder marks	" " "	" "	" "
60418	"	"	"	Urethral discharge	Spermatozoa	" " "	" "	" "
60418	"	"	"	Urine	"	" " "	" "	" "
60466	7-25-08	7-27-08	East Wallingford	Autopsy	Cause of death	" " "	" "	" "
60466	"	"	"	Vaginal Swabs (5)	Spermatozoa	" " "	" "	" "
60466	"	"	"	Boots	Blood	" " "	" "	" "
58883	6- 2-08	6- 7-08	West Rutland	Autopsy	Cause of death	" " "	" "	" "
59085	"	"	"	Stomach contents	Alcohol	" " "	" "	" "
58804	5-28-08	6- 2-08	Rutland	Vaginal Swab	Spermatozoa	" " "	John Tyler	" "
58804	"	"	"	Vaginal Smear	"	" " "	" "	" "
58795	"	"	"	Clothing	"	" " "	" "	" "
			Washington County					
56670	3- 3-08	3- 4-08	Barre	Autopsy	Cause of death	Alcoholism	C. C. Fitts	Benj. Gates
56670	6- 1-08	6- 4-08	"	Stomach contents	Alcohol	Positive	" "	" "
58882	"	"	"	Autopsy	Cause of death	Body decomposed. No evidence of crime	" "	" "
53408	12- 5-08	1-29-08	Montpelier	Organs	Poison	Negative	J. Watson	" "
			Windham County					
61063	8-17-08	8-19-08	Grafton	Autopsy	Cause of death	Case pending in court	C. C. Fitts	R. C. Bacon
			Windsor County					
59481	6-25-08	6-23-08	Bethel	Autopsy	Cause of death	Blows on head	C. C. Fitts	E. R. Buck

Digitized by Google

DRUGS

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
58015	5-22-08	Scotch Whiskey	Geo. F. B. Willard, Vergennes	Submitted	..	1	..	Does not conform to U. S. P. standard
58016	"	Canadian Club Whiskey	W. R. Warner & Co., "	"	..	1	..	" " " " "
58517	5-23-08	Malt Nutrine	.....	Anheuser Busch Brewing Co., St. Louis	1	..	..	Submitted
58458	"	Private Stock Rye Whiskey	H. H. Davis, Bellows Falls	L. Strousse & Co., Philadelphia, Pa.	..	1	..	Does not conform to U. S. P standard. Submitted
58457	"	Imported Brandy	" " "	" " " "	..	1	..	Does not conform to U. S. P. standard. Submitted
58456	"	Port Wine	" " "	" " " "	1	..	..	Submitted
58455	"	Sherry Wine	" " "	" " " "	1	..	..	Submitted
54261	6-16-08	Syrup of White Pine and Tar	McCallen & Farmer, Rutland	McCallen & Farmer, Rutland	..	..	1	Sticker not in proper form or place
54262	"	Green's Syrup of Tar	" " "	The Lester H. Greene Co., Montpelier	..	..	1	Misleading statements
54260	"	Dr. A. Boschee's German Syrup	" " "	L. M. Green, Woodbury, Vt.	..	..	1	" "
54254	"	Day's Compound Syrup of White Pine and Tar	Chas. W. Ward, "	French Cave & Co., Philadelphia	..	..	1	" "
54288	"	Higgins' T. and C. Compound	Higgins Drug Co., "	Higgins Drug Co., Rutland	..	..	1	Label not in proper form
54306	"	Cough Syrup	Trudell Drug Co., "	Trudell Drug Co., "	..	..	1	Misleading statements
54454	"	Syrup of Tar	Green Bros., Fair Haven	Green Bros., Fair Haven	..	..	1	" "
55932	"	Compound Syrup White Pine and Tar	G. E. McGrath, Montpelier	G. E. McGrath, Montpelier	..	..	1	Label not in proper form
55938	"	Wild Cherry Cough Balsam	W. E. Poole, "	W. E. Poole, "	..	..	1	" " " "
55943	"	Cough Balsam	H. C. Slade, "	H. C. Slade, "	..	..	1	" " " "
54456	"	Corn and Bunion Cure	Green Bros., Fair Haven	Green Bros, Fair Haven	..	..	1	" " " "
54265	"	Dr. Gregories' Headache Remedy	McCallen & Farmer, Rutland	McCallen & Farmer, Rutland	..	..	1	Misleading statement
54257	"	Pepsin	Chas. W. Ward, "	John Wyeth & Bro., Philadelphia	1	..	..	
54256	"	Pancreatin	" " "	" " "	1	..	..	
55929	8- 4-08	Fowler's Solution	G. E. McGrath, Montpelier	G. E. McGrath, Montpelier	1	..	..	
55937	"	Lime Water	W. E. Poole, "	W. E. Poole, "	1	..	..	
55928	"	" "	G. E. McGrath, "	G. E. McGrath, "	1	..	..	
55931	"	Tinct. Iodine	" "	" "	1	..	..	
55936	"	" "	W. E. Poole, "	W. E. Poole, "	1	..	..	
55940	"	" "	Harry A. Slade, "	Harry A. Slade, "	1	..	..	
54255	1-11-08	Pancreobismuth and Pepsin	Charles W. Ward, Rutland	Geo. C Frye, Portland, Me.	1	..	..	
55925	8- 4-08	Lime Water	C. Blakely, Montpelier	C. Blakely, Montpelier	1	..	..	
55927	"	Tinct. Iodine	" "	" "	..	1	..	Contains 5.29 grs. iodine in 100 cc
55942	"	Lime Water	H. A. Slade, "	H. A. Slade, "	..	1	..	" .074 per cent calcium hydroxide
59557	6-25-08	Fowler's Solution	W. W. Townsend, Rutland	Submitted	..	1	..	" .68 grs. arsenic trioxide in 100 cc.

Digitized by Google

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
59038	6-23-08	"Orangine" Powder		Orangeine Chemical Co.	1			Submitted
55026	3- 4-08	Spirits Camphor	C. Blakely, Montpelier			1		Below U. S. P. standard (90% U. S. P. strength)
55030	"	" " "	G. E. McGrath, "	G. E. McGrath, Montpelier	1			Conforms to U. S. standard
55035	"	" " "	W. E. Poole, "	W. E. Poole, "		1		70% U. S. P. strength
55041	"	" " "	H. A. Slade, "	H. A. Slade, "	1			Conforms to U. S. standard
59046	7- 9-08	Lime Water	Dutcher, St. Albans	Dutcher, St. Albans	1			
59042	"	" " "	M. T. Huber, St. Albans	M. T. Huber, "	1			
59045	"	" " "	A. N. Smith, "	A. N. Smith, "	1			
59043	"	" " "	E. J. Alexander, "	E. J. Alexander, St. Albans	1			
59041	"	" " "	C. D. O'Leary, "	C. D. O'Leary, "		1		No alkalinity
59044	"	" " "	J. P. Reagan, "	J. P. Reagan, "		1		Not up to U. S. P. standard
59031	"	Spirits Camphor	A. G. Smith, "	A. G. Smith, "	1			
59034	"	" " "	E. J. Alexander, "	E. J. Alexander "	1			
59032	"	Camphor Solution	M. T. Huber, "	M. T. Huber, "	1			
59033	"	Spirits Camphor	Dutcher Drug Co., St. Albans			1		85% U. S. P. standard
59030	"	" " "	W. Merritt, "	Kimball Bros., Enosburg Falls		1		85% " "
59033	"	" " "	C. D. O'Leary, "	C. D. O'Leary, St. Albans		1		50% " "
59035	"	Tincture Iodine	M. T. Huber, "	M. T. Huber, "	1			U. S P. "
59038	"	" " "	A. G. Smith, "	A. G. Smith, "	1			" "
59039	"	" " "	E. J. Alexander, "	E. J. Alexander, "	1			" "
59036	"	" " "	C. D O'Leary, "	C. D. O'Leary, "		1		Not up to U. S. P standard
59037	"	" " "	J. C. Reagan, "	J C. Reagan, "		1		" " " "
59040	"	" " "	Dutcher Drug Co., "	Dutcher Drug Co., "		1		" " " "
59047	"	Formalin	M. T. Huber, "	M. T. Huber, "		1		38.12% formaldehyde gas
59048	"	"	A. G. Smith, "	A. G. Smith, "	1			39.6 " " "
59049	"	"	C. D. O'Leary, "	C. D. O'Leary, "	1			40.0 " " "
59050	"	"	Dutcher Drug Co., "	Dutcher Drug Co., "	1			38.7 " " "
59051	"	"	E. J. Alexander, "	E. J. Alexander, "	1			40.0 " " "
59052	"	"	J. C. Reagan, "	J. C. Reagan, "	1			39.4 " " "
59024	"	Alcohol	C. D. O'Leary, "		1			U. S. P.
59025	"	"	Dutcher Drug Co., "		1			"
59026	"	"	E. J. Alexander, "		1			"
59027	"	"	M. T. Huber, "		1			"
59028	"	"	A. G. Smith, "		1			"
59073	"	Flag Salt (Headache)	M. T. Huber, "	Flag Salt Remedy Co., Savannah, N. Y.			1	Misbranded. Amount acetanilid not stated. (3.9 grs.)
59079	"	Caffein Headache Pills	Dutcher Drug Co., St. Albans	Dutcher Drug Co., St. Albans			1	Misbranded Named after single constituent
59083	"	Davis Anti-Headache	M. T. Huber, "	Dr. N. C. Davis, Frankfort, Ind.			1	Misleading statements. Amount acetanilid not stated

Digitized by Google

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
59989	7- 9-08	Bradycrotine	M. T. Huber, St. Albans	Bradycrotine Mfg. Co., Macon, Ga.	..	..	1	Misleading statements. Amount acetanilid not stated
59982	"	Hatch's Cough Mixture	Dutcher Drug Co., "	Dutcher Drug Co., St. Albans	..	..	1	Misleading statements. Chloroform not stated. Fictitious name
59984	"	Lambert's Syrup of Tar	E. J. Alexander, "	Lambert Medical Inst., Montreal	..	..	1	Misleading statements. Chloroform and alcohol not stated
59985	"	Syrup of White Pine and Tar	St. Albans Coffee Co., "	Dutcher Drug Co., St. Albans	..	..	1	Misleading statements. Chloroform and alcohol not stated
59988	"	Kemp's Balsam	Dutcher Drug Co., "	O. F. Woodward, Le Roy, N. Y.	..	..	1	Fictitious name. Chloroform and alcohol not stated
59981	"	Whitney's Pulmonary Elixir	" " " "	Henry, Johnson & Lord, Burlington	..	..	1	Fictitious name. Chloroform and alcohol not stated
59959	"	Extract Vanilla	C. D. O'Leary, "		1	..	..	
59960	"	Thepure Vanilla Flavor	Sweeney Gro. Co., "	McAndrews, Portland, Me.	1	..	..	Not pure vanilla, but label is correct
59961	"	Ext. of Vanilla	E. J. Alexander, "	E. J. Alexander, St. Albans	1	..	..	
59962	"	Vanilla and Tonka	J. C. Reagan, "	J. C. Reagan, "	1	..	..	Not pure extract vanilla, but label is correct
59963	"	Vanilla Compound	Dutcher Drug Co., "	Dutcher Drug Co., St. Albans	1	..	..	" " " " " "
59972	"	Shiloh's Catarrh Remedy	Huber Drug Co., "	S. C. Wells, Le Roy, N. Y.	..	..	1	Misleading statements. Fictitious name
59974	"	Dr. Pettit's Eye Salve	A. G. Smith, "	Howard Bros., Buffalo, N. Y.	..	..	1	Fictitious name
59975	"	Wei De Meyer's Catarrh Cure	" "	A. G. Smith, St. Albans	..	..	1	Fictitious name. Misleading statements
59978	"	Mrs. Morgan's Soothing Syrup	" "	Empire State Drug Co., Buffalo	..	..	1	Fictitious name
59980	"	Smith's Eye Water	J. C. Reagan, "	Smith Eye Water Co., Albany	..	..	1	Misleading statements
59990	"	Rudolph's Kola Cardinette	A. G. Smith, "	Pallisade Mfg. Co.	..	1	1	Fictitious name. Contains cocaine
59964	"	Tincture Aconite	E. J. Alexander, "	E. J. Alexander, St. Albans	1	..	..	U. S. P.
60910	8- 8-08	" Iodine	Quinlan's, Bennington	Quinlan's, Bennington	1	..	..	"
60908	"	Lime Water	D. A. Ward, "	D. A. Ward, "	1	..	..	"
60907	"	Spirits Camphor	" "	" "	..	1	..	62% U. S. P.
60905	"	Tinct. Iodine	" "	" "	..	1	..	57% U. S. P.
60893	"	Spts. Camphor	J. M. Ayres, "	J. M. Ayres, "	..	1	..	86% U. S. P.
60894	"	Tinct. Iodine	" "	" "	..	1	..	About 78% U. S. P.
60892	"	Formalin	" "	" "	1	..	..	About 38.4% formaldehyde
60888	"	Camphor Spts.	W. L. Gokey, "	W. L. Gokey, "	..	1	..	89% U. S. P.
60890	"	Tinct. Iodine	" "	" "	1	..	..	U. S. P.
60889	"	Formalin	" "	" "	1	..	..	Formaldehyde 39%
60900	"	Tinct. Iodine	E. B. Hyde, "	E. B. Hyde, "	1	..	..	U. S. P.
60901	"	Formalin	" "	" "	1	..	..	Formaldehyde 38.8%
60897	"	Lime Water	Harwood Drug Co., Bennington	Harwood Drug Co., Bennington	1	..	..	U. S. P.
60899	"	Tinct. Iodine	" " " "	" " " "	1	..	..	"

Digitized by Google

DRUGS (Continued)

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
60898	8- 8-08	Formalin	Harwood Drug Co., Bennington	Harwood Drug Co., Bennington	1	..	..	Formaldehyde 39.4%
60922	"	German Fir Cough Cure	Puffer & Walker, "	Dilliard Remedy Co., E. Bangor, Pa	..	..	1	Contains alcohol, per cent not stated. Misleading statement on label
60923	"	Laudanum	N. A. Viall, "	Bunny Drug Co, Troy, N Y	..	1	..	.535 grs. morphine per 100 cc. Not U. S. P.
60886	"	Beef, Iron and Wine	Bennington Home Tea Co.,		..	..	1	Contains 15.30% alcohol by volume Not stated
59977	7- 9-08	Humphrey's Headache Specific	E. J. Alexander, St. Albans		1	..	..	
59953	"	Tincture Opium	C. D. O'Leary, "	C. D. O'Leary, St. Albans	1	..	..	Conforms to U. S. P. standard
59976	"	National Corn Remover	Huber Drug Co., "		1	..	..	
59987	"	Kohler's Corn Cure	" " " "		1	..	..	
60896	8- 8-08	Spirits Camphor	Harwood Drug Co., Bennington	Harwood Drug Co., Bennington	1	..	..	U. S. P.
60904	"	" "	Hyde Drug Store, "	Hyde Drug Store, "	1	..	..	"
60919	"	Harris' Spirits Camphor	H. A. Harbour, "		1	..	..	"
60925	"	Spirits Camphor	N. A. Viall, "	Bunny Drug Co., Troy, N. Y.	1	..	..	"
				Total	60	14	17	

Digitized by Google

Laboratory No.	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
58136	5-18-08	Maple Sugar	Callahan & Booth, Montpelier	H. B. Chapin, Montpelier	1	.	.	
58137	"	" "	H. H. Bowman, "		1	.	.	
58135	"	" "	Edward Gill, "	E. W. Daniels, "	1	.	.	
58133	"	" "	Sherburne & Flint, "	Lee Templeton, "	1	.	.	
58132	"	" "	" " "	F. E. Morse, "	1	.	.	
58131	"	" "	L. B. Brooks, "	J. R. Young, "	1	.	.	
58130	"	" Syrup	Berry & Jones, "	Wyere Silloway, "	1	.	.	
58269	"	" "	L. T. Pau, St. Albans		1	.	.	Submitted
58284	"	Tomato Catsup	Rumrill, Randolph	Curtice Bros., Rochester, N. Y.	1	.	.	"
58463	5-20-08	Lemon Extract	W. C. Brate, Albany, N. Y	W. C. Brate, Albany, N. Y	1	.	.	"
58464	"	" "	" " " "	" " " "	.	1	.	Low in lemon oil. Submitted
58134	"	Maple Sugar	E. C. Lewis, Montpelier	Omar Wheelock, Montpelier	1	.	.	
58931	6-4-08	Butter	Morris Smith, Burlington		1	.	.	
58932	"	"	" " "		1	.	.	
56354	6-6-08	Cinnamon		W. C. Staley, Troy, N. Y.	.	.	1	Submitted. Below weight
56355	"	Cloves		" " " "	.	1	.	" Contains too many clove stems
56356	"	Ginger		" " " "	1	.	.	"
56357	"	Pepper		" " " "	1	.	.	"
56358	"	Allspice		" " " "	1	.	.	"
56359	"	Mustard		" " " "	1	.	.	"
55931	"	Cassia	Berry & Jones, Montpelier	Swain, Earle & Co., Boston	1	.	.	
55915	"	Mustard	Marvin & Sherburne "	A. Colburn Co., Philadelphia	1	.	.	
55914	"	Pepper	" " "	Berry, Dodge & Co., Newburyport, Mass	1	.	.	
55913	"	Cloves	" " "	Berry, Dodge & Co., Newburyport, Mass	.	1	.	Contains too many clove stems
55896	"	Mustard	Kellogg & Jerome, "	Dwinell Wright Co., Boston	1	.	.	
55895	"	Cloves	" " "	" " " "	1	.	.	
55891	"	Mustard	Callahan & Booth, "	Berry, Hall & Co., Burlington	1	.	.	
55890	"	Pepper	" " "	" " " "	1	.	.	
55889	"	Allspice	" " "	" " " "	1	.	.	
55888	"	Pickling Spice	" " "	" " " "	1	.	.	
55887	"	Cloves	L. B. Brooks, "	Martin L. Hall & Co., Boston	1	.	.	
55870	"	Cinnamon	Edward Gill, "	R. T. French & Co., Rochester, N. Y.	1	.	.	
55920	6-11-08	Cream Tartar	Berry & Jones, "	Swain, Earle & Co., Boston	.	.	1	Weighs less than ¼ pound
55909	"	" "	Edward Gill, "	D. L. Slade & Co., Boston	1	.	.	
54956	"	" "	A. D. Tossing, Rutland	W. C. Staley, Troy, N. Y.	1	.	.	
54941	"	" "	F. W. Stafford, "	F. W. Stafford, Rutland	1	.	.	
54894	"	" "	Geo. A. Bucklin, "	Sprague, Warner & Co., Chicago	1	.	.	

Digitized by Google

Laboratory No.	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
59081	6-11-08	Cream Tartar	J. Gill, Rutland		.	1	.	Contains starch. Submitted
55938	6-15-08	Extracted Honey	Kellogg & Jerome, Montpelier	J. E. Crane, Middlebury, Vt.	1	.	.	
54450	"	" "	E. J. Preston, Fair Haven	Vermont Farmers Co., Springfield, Mass.	1	.	.	
54318	"	" "	Geo. A. Bucklin, Rutland	Sprague, Warner & Co., Chicago	1	.	.	
55879	"	Raspberry Extract	L. B. Brooks, Montpelier	Saratoga Extract & Chemical Co., Saratoga Springs	.	1	.	Artificial extract.
59567	6-22-08	Vanilla Extract	Burlington Gro. Co., Burlington		1	.	.	
59608	6-27-08	Canned Blueberries		A. W. Sternberg, Greensboro, Vt.	.	.	.	Submitted. Sample too small
55910	3- 4-08	Peach Preserves	Marvin & Sherburne, Montpelier	California Fruit & Canning Co.	1	.	.	
55911	"	"Como" Sugar Corn	" " "	Oswego Falls Canning Co., Fulton, N. Y.	1	.	.	
59909	7- 9-08	Cheese			.	.	.	Submitted by M. H. Hazen, So. Royalton No poisons found
59996	"	Lemon Extract	St. Albans Coffee Co.	Dutcher Drug Co., St. Albans	.	1	.	Short measure and low in per cent lemon oil
59995	"	Orange "	" "	" " "	.	1	.	" " 8.7% orange oil
59993	"	Banana "	" "	" " "	.	1	1	Imitation Short measure
59992	"	" "	Palmer & Torrance, St. Albans	" " "	.	.	1	Imitation
59994	"	Strawberry "	St. Albans Coffee Co., "	" " "	.	.	1	" Artificial color
59991	"	Erie Mince Meat	M. C. Finn, "	Erie Preserving Co., Buffalo, N. Y.	1	.	.	No preservatives
59956	"	Olive Oil	C. D. O'Leary, "		.	1	.	Contains cottonseed oil
60004	"	Lime Juice	Palmer & Torrance, "	J. A. Hedly, New York	1	.	.	
59957	"	Olive Oil	St. Albans Fruit Co., "	Pastene & Co., Boston	1	.	.	Pure oil
60211	7-17-08	Butter			1	.	.	Submitted
59958	7- 9-08	Extract Peppermint	M. T. Huber, St. Albans		1	.	.	U. S. P.
60002	"	Swift Beef Fluid	Palmer & Torrance, St. Albans	Swift & Co., Chicago	.	.	.	No Standard. Submitted
60001	"	Extracted Honey	" " "	J. E. Crane, Middlebury	1	.	.	
60274	7-20-08	Brown Sugar	C. A. Barber, Burlington		1	.	.	No boric acid } For comparison
60275	7-20-08	" "	" "		1	.	.	(?) Faint trace boric acid } with No. 60226
59999	7- 9-08	Prepared Plum Pudding	Palmer & Torrance, St. Albans	All Ready Pure Food Co., Boston	1	.	.	
60000	"	Vinegar	L. H. Lombard, "	J. Baron Foss, St Albans Bay	1	.	.	
60453	7-24-08	Brown Sugar	Paul Kelly, Burlington	Burlington Grocery Co.	.	.	.	No boron compounds
60526	7-28-08	Meat	F. C. Batchellor, Braintree		.	.	.	Unfit for food. Putrified. Submitted
60226	7-17-08	Sugar	H. C. Gutchiss, Port Byron, N. Y.		.	.	.	Trace of boron (?) Ingredient of suspected mince meat
60227	7-17-08	Flour	" " " "		.	.	.	No boron. Ingredient of suspected mince meat
60228	"	Mixed Spices	" " " "		.	.	.	No boron. Ingredient of suspected mince meat

Digitized by Google

Laboratory No.	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
60229	"	Dried Apples	H. C. Gutchiss, Port Byron, N. Y.		.	.	.	No boron. Ingredient of suspected mince meat
60230	"	Raisins	" " " "		.	.	.	No boron. Ingredient of suspected mince meat
60231	"	Beef	" " " "		.	.	.	No boron. Ingredient of suspected mince meat
60232	"	Currants	" " " "		.	.	.	No boron. Ingredient of suspected mince meat
60233	"	Vinegar	" " " "		.	.	.	No boron. Ingredient of suspected mince meat
60234	"	Boiled Cider	" " " "		.	.	.	No boron. Ingredient of suspected mince meat
60512	7-28-08	Brown Sugar	" " " "		.	.	.	No boron. Ingredient of suspected mince meat
60006	7- 9-08	"Cream Puff"	A. G. Smith, St. Albans	Miner Fruit Nectar Co., Boston..no standard				Gum and starch ice cream powder. Illegal in ice cream
60005	"	"Selaw"	St. Albans Fruit Co.	J. Middleby, Jr., Boston	"	.	.	Gum and starch ice cream powder. Illegal in ice cream
60612	7-30-08	Ice Cream Chocolate.	B L. Kent, Burlington	B L. Kent, Burlington	1	.	.	Fat 16.0 Bacteria 1,200,000 per cc.
60613	"	Strawberry Ice Cream	" " "	" " "	1	.	.	" 28.0 " 1,400,000 "
60614	"	Vanilla "	A. J Laferriere, Winooski	A. J. Laferriere, Winooski	.	1	.	" 10.0 (low) " 1,500,000 "
60615	"	" "	M. Rogov, Burlington	H. N. Coon, Burlington	1	.	.	" 19.0 " 600,000 "
60616	"	Chocolate "	Kenyon McCarty, Burlington	" " "	1	.	.	" 20 0 " 1,000,000 "
60617	"	Vanilla "	Concord Candy Kitchen, Burlington	Concord Candy Kitchen, Burlington	1	.	.	" 19.0 " 2,000,000 "
60618	"	Chocolate "	" " " "	" " " "	1	.	.	" 15 0 " 1,600,000 "
60619	"	Strawberry "	" " " "	" " " "	1	.	.	" 16.0 " 1,400,000 "
60620	"	Vanilla "	Crystal Palace, "	Crystal Palace, "	1	.	.	" 24 0 " 2,000,000 "
60621	"	Chocolate "	" " "	" " "	1	.	.	" 24.0 " 180,000 "
60622	"	Strawberry "	" " "	" " "	1	.	.	" 26 0 " 800,000 "
60623	"	Vanilla "	Morris Brown, Burlington	Morris Brown, Burlington	.	1	.	" 8.0 (low) dirty " 3,000,000 "
60624	"	" "	Geo. W. Brown, "		1	.	.	" 22.0 " 600,000 "
60625	"	" "	C. Gosselin, "	I. E. Chase, Elmwood Ave...	.	1	.	" 10.0 (low) " 2,000,000 "
60626	"	" "	T. Pagones, "	Concord Candy Kitchen	1	.	.	" 17 0 " 2,000,000 "
60963	8- 2-08	Cresco Flour	Farwell & Rhines, Watertown, N.Y.	Also manufacturer	.	.	.	Starch 72%. Not a gluten flour. Submitted by D. F. Davis, Barre
60838	8- 4-08	Lemon Soda	Rosenthal Bros.	Also manufacturer	.	.	1	Artificially flavored, colored and sweetened and not so stated
60839	"	Nerve Tonic	" "	" "	.	.	1	Artificially flavored, colored and sweetened and not so stated

Digitized by Google

Laboratory No.	Date	Article	Dealer	Manufacturer or Wholesaler	Legal	Adulterated	Misbranded	Remarks
60840	8-17-08	Strawberry Soda	D. Mansur, Burlington	Sam Canon, City	.	.	1	Artificially flavored, colored and sweetened No label
60841	"	Lemon "	" " "	" " "	.	.	1	Artificially flavored, colored and sweetened No label
60842	"	Cream "	" " "	" " "	.	.	1	Artificially flavored, colored and sweetened No label
60843	"	Chocolate Cream Soda		John Fagga, "	.	.	1	Artificially flavored, colored and sweetened and not so stated
60844	"	Cream Soda		" " "	.	.	1	Artificially flavored, colored and sweetened and not so stated
60845	"	Sarsaparilla Soda		" " "	.	.	1	Artificially flavored, colored and sweetened and not so stated
60846	"	Birch Beer		" " "	.	.	1	Artificially flavored, colored and sweetened and not so stated
60757	8- 5-08	Cheese "H"	Cross Abbott Co., White River		.	.	.	No ptomaines found.
60758	"	" "S"	" " " "		.	.	.	No ptomaines found.
60921	8- 8-08	Good Value Lemon Extract	Puffer & Walker, Bennington		1	.	.	Lemon oil 5.3 per cent
60913	"	Oriental Lemon Extract	A. C. Lamarre, "	E. B. Barlow, Binghamton, N. Y.	.	1	.	No oil of lemon
60912	"	Cottons' Lemon Extract	" " "	C. L. Cotton Co., Earlville, N. Y.	.	1	.	" "
60929	"	Miller's Lemon Extract	M. A. Viall, "	Miller Mfg. Co., New York	.	1	.	Less than 1 per cent lemon oil
60927	"	Lemon Extract sold in bulk	" " "		.	1	.	No oil of lemon
60917	"	Williams Orange Extract	W. C. Howan, "		1	.	.	Orange oil 6 per cent
60915	"	Charter Oak Lemon Extract	" " "	"Made at Hartford, Conn."	.	1	.	Low in lemon oil 4.6 per cent
60918	"	Saratoga Lemon Extract	" " "		.	1	.	Less than 1 per cent oil lemon
60916	"	Williams' Lemon Ext	" " "		1	.	.	Lemon oil 5.7 per cent
60931	8- 8-08	Health Brand Lemon Extract	William Culliton, Bennington	De Gross, New York	1	.	.	Lemon oil 8.8 per cent
60906	"	Olive Oil	D. A. Ward, "		1	.	.	Pure
60895	"	" "	J. M. Ayres, "		1	.	.	"
59998	7- 9-08	XXX Soda	St. Albans Coffee Co., St. Albans	Dudley & Co., Fairport, N. Y.	1	.	.	Pure

Digitized by Google

Foods (Continued)

Laboratory No.	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
60987	8- 8-08	Home Soda.....	Bennington Home Tea Co., Bennington.....	.....	.	1	.	Pure
60980	"	Home Made Mince Meat.....	N. A. Viall, Bennington	.....	1	.	.	No preservatives found
60994	"	Spirits Peppermint...	" " " "	Bee Line, Bunny Drug Co., Troy, N. Y.	1	.	.	10.4 per cent oil peppermint
60971	7-23-08	Baking Powder.....	Submitted by M. B. Leach, Essex...	Sears Roebuck & Co.....	1	.	.	Imperfectly kept. Available CO_2 11 04
60990	8- 8-08	Sunshine Baking Powder.....	H. A. Harbour, Bennington	R. T. French, Rochester, N. Y	1	.	.	Available CO_2 10.01 per cent
					74	18	14	

Digitized by Google

Milk Below Standard

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
58145	5-14-08	H. J. Novak	Rutland	.....	.....	.....	.....	Dirty
58146	"	A. A. Plumley	"	.....	.....	.....	.....	"
58152	"	T. A. Quigley	"	.....	.....	.....	.....	"
58153	"	J. C. McGoldrick	"	.....	.....	.....	.....	"
58155	"	L. E. Lord	"	.....	.....	.....	.....	"
58156	"	J. S. Grandy	"	.....	.....	.....	.....	"
58160	"	R. H. Fintello	"	.....	.....	.....	.....	"
59195	6-12-08	River View Farm	Burlington	12.45	8.75	3.7	Normal	" Bacteria, 85,000 per cc.
59199	"	Thomas Ryan	"	12.82	9.02	3.8	"	" " 200,000 "
59205	"	J. E. Maynard	"	12.81	8.81	4.0	"	Bacteria, 200,000 per cc.
59208	"	F. L. Murray	"	12.56	8.56	4.0	"	" 250,000 "
59207	"	Mrs F. X. Saltus	"	12.56	8.56	4.0	"	" 125,000 "
59210	"	D. Bourne	"	12.58	8.98	3.6	"	" 200,000 "
59212	"	J. G. G. Downing	"	13.76	8.76	5.0	"	" 250,000 "
59213	"	E. J. Viens	"	13.31	9.11	4.2	"	" 220,000 "
59214	"	T. P. Welch	"	12.57	8.87	3.7	"	" 250,000 "
59216	"	Mrs Peter Bushey	"	13.05	8.85	4.2	"	" 320,000 "
59218	"	Bostwick Bros	"	11.94	8.54	3.4	"	" 125,000 "
59219	"	Wm. McGrath	"	13.70	9.11	4.6	"	" 125,000 "
59968	7- 8-08	M. P. Brill	St. Albans	9.61	6.81	2.8	.....	Watered. Submitted by Van Camp Co., St. Albans
60084	7-14-08	.....	Burlington	11.01	8.71	2.4	Normal	Low in fat. Submitted by C. W. Drew, Burlington
60137	7-15-08	E. C. Bordo	"	12.45	8.75	3.7	240,000 per cc.	High in bacteria
60140	"	W. C. Hoag	"	12.56	8.56	4.	260,000 "	" "
60142	"	F. L. Murray	"	13.28	8.68	4.6	180,000 "	" "
60145	"	E. J. Viens	"	13.27	8.47	4.8	500,000 "	" "
60149	"	J. G. G. Downing	"	13.43	9.13	4.3	400,000 "	" "
60150	"	T. P. Welch	"	12.33	8.73	3.6	500,000 "	" "
60151	"	I. E. Chase	"	12.57	8.77	3.8	400,000 "	" "
60152	"	Peter Bushey	"	12.92	8.92	3.3	500,000 "	" "
60159	"	J. E. Maynard	"	12.8	8.6	4.2	350,000 "	" "
60161	"	River View Farm	"	12.84	8.94	3.4	250,000 "	" "
60162	"	Wm. Suckstorf	"	13.42	8.92	4.5	350,000 "	" "
60442	"	F. C. Russell	Proctor	11.61	8.61	3.0	.....	Low in fat
60579	7-30-08	.....	.....	10.6	7.6	3.0	Pus cells and streptococci	Submitted by G. H. Reynolds, Winooski
60651	8- 1-08	.....	.....	8.15	6.15	2.0	" " Refractometer 31.0	" " " "
60652	"	.....	.....	9.9	7.9	2.0	" " " 36.5	" " " "
60810	7-30-08	Submitted by A. E. Lamson	Burlington	13.3	8.9	4.4	140,000 per cc.	High in bacteria
60811	"	" " "	"	15.75	8.55	7.2	150,000 "	" "
60702	8- 3-08	" Geo. Mylkes	"	10.0	9.0	1.0	.....	Low in fat. Skimmed. Submitted
61290	8-25-08	J. E. McGoldrick	Rutland	14.26	9.0	5.2	Normal	Dirty
61391	8-29-08	Sanitary Milk Co	St. Albans	11.14	8.74	2.4	"	Low in fat
61392	8-29-08	R. B. Davis	"	11.97	8.72	3.25	"	Dirty

Digitized by Google

Milk Above Standard

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
58139	5-14-08	L. Avery	Rutland	12.44	8.54	3.9	Normal	
58140	"	Mead Farm	"	11.97	8.67	3.3	"	
58141	"	A. Premo	"	12.44	8.54	3.9	"	
58142	"	C. A. Brackett	"	12.20	8.50	3.7	"	
58143	"	C. P. Bube	"	11.94	8.64	3.3	"	
58144	"	Ray Russell	"	13.28	8.64	4.6	"	
58147	"	David Lillie	"	12.57	8.77	3.8	"	
58148	"	Temple Bros.	"	12.68	8.58	4.1	"	
58149	"	C. G. Marks	"	13.16	8.66	4.5	"	
58150	"	G. A. Davis	"	12.80	8.60	4.2	"	
58151	"	H. C. Perkins	"	12.56	8.66	3.9	"	
58154	"	T. P. Mangan	"	13.52	8.72	4.8	"	
58157	"	Wilkins & Mead	"	12.08	8.58	3.5	"	
58158	"	C. L. Dye	"	12.30	8.50	3.8	"	
58159	"	E. J. Walsh	"			6.0	"	Top milk
58161	"	A. L. Davis	"	11.97	8.67	3.3	"	
58192	"	Dunn Bros. Farm	"	12.93	8.83	4.1	"	
58630	5-26-08	A. L. Sherman	Burlington	9.20	9.20	0.05	"	Skim milk. Submitted
58742	6- 1-08	N. Spear	Proctor	13.18	8.88	4.3	"	
58743	"	L. J. Bush	"	14.80	8.70	4.6	"	
58744	"	R. J. Bruce	"	12.21	8.71	3.5	"	
58745	"	J. B. Turner	"	13.31	9.11	4.2	"	
58746	"	W. Humphrey	"	12.48	9.18	3.3	"	
58747	"	J. Kraus	"	13.40	8.70	4.7	"	
58748	"	C. Ladabouche	"	11.97	8.67	3.3	"	
58749	"	E. Myatt	"	11.97	8.67	3.3	"	
58750	"	B. Hier	"	13.18	9.08	4.1	"	
58751	"	F. C. Russell	"	13.08	9.18	3.9	"	
58752	"	J. Stone	"	13.67	9.17	4.5	"	
58753	"	A. Morton	St. Albans			46.0	"	Cream.
58754	"	Mr. Ploof	"	11.80	8.50	3.3	"	
58755	"	J. N. Warner	"	13.16	8.66	4.5	"	
58756	"	Z. W. Campbell	"	12.92	8.72	4.2	"	
58757	"	R. B. Davis	"	14.00	8.60	5.4	"	
58758	"	C. M. Bell	"	13.58	8.88	4.7	"	
58864	6- 2-08	I. E. Chase	Burlington	13.18	8.88	4.3	"	Submitted
59034	6- 6-08	J. Lufson	Enosburg Falls	14.99	9.19	5.8	"	
59193	6-12-08	L. E. Haynes & Son	Burlington	13.31	9.11	4.2	"	
59194	"	H. B. Chittenden & Son	"	13.58	8.72	4.8	"	

Digitized by Google

Milk Above Standard (Continued)

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
59196	6-12-08	E. O. Reynolds	Burlington	12.70	9.00	3.7	Normal	
59197	"	I. H. Buck	"	13.30	8.80	4.5	"	
59198	"	D. J. Millham & Son	"	13.04	8.64	4.4	"	
59200	"	H. H. Wheelen	"	12.33	8.83	3.5	"	
59201	"	H. A. Bixby	"	13.54	8.94	4.6	"	
59202	"	Steele & Butler	"	13.30	9.00	4.3	"	
59203	"	C. C. Bliss	"	12.80	8.60	4.2	"	
59204	"	O. E. Barber	"	12.34	8.90	3 4	"	
59206	"	E. C. Bordo	"	12.60	9.20	3.4	"	
59207	"	Wm. Suckstorff	"	13.28	8.68	4.6	"	
59211	"	I. E. Chase	"	12.34	8.94	3.4	"	
59215	"	James Snyder	"	13.76	8.76	5.0	"	
59217	"	J. B. Ritchie	"	12.44	8.54	3.9	"	
59339	6-17-08	F. C. Russell	Proctor	12.09	8.69	3.4	"	
59338	"	T. V. Bates	"	12.81	8.81	4.0	"	
59337	"	J. Stone	"	12.09	8.79	3.3	"	
59336	"	W. Fox	"	12.09	8.79	3.3	"	
59335	"	R. J. Bruce	"	11.97	8.67	3.3	"	
59334	"	Mead Farm	"	12.80	8.60	4.2	"	
59333	"	J. B. Turner	"	12.45	8.85	3.6	"	
59332	"	J. Kraus	"	12.38	8.78	3.6	"	
59331	"	E. Myett	"	12.20	8.60	3.6	"	
59330	"	C. Ladabouche	"	12.92	8.72	4.2	"	
59329	"	B. Hier	"	12.38	8.78	3.6	"	
59328	"	W. Spear	"	12.09	8.64	3.4	"	
59641	6-29-08	A. Norris	E. Fairfield	.....	.....	32.0	.....	Cream. No preservative
59878	7- 8-08	Sweeney Grocery Co	St. Albans	.....	.....	42.0	1,000,000 per cc.	Cream from J. N. Warner's dairy.
59880	"	J. N. Warner	"	11.91	8.66	3.25	1,000,000 " "	Refractometer reading 41.5
59879	"	A. H. Austin, Depot Café	"	12 58	8.98	3.6	800,000 " "	
59881	"	R B. Davis	"	12.08	8.48	3.6	950,000 " "	
59883	"	Sanitary Milk Co	"	13.18	8.98	4.2	720,000 " "	(No regulation in St. Albans as to number of bacteria per cc.)
59883	"	C. N. Bell	"	12.03	8.78	3.25	26,000 " "	
59884	"	Z. W. Campbell	"	12.92	8.72	4.2	1,500,000 " "	
59885	"	R. A. Warner & Sons	"	12.57	8.77	3.8	650,000 " "	
60131	7-15-08	I. H. Buck	Burlington	13.04	8.64	4.4	100,000 " "	
60132	"	O. Mongeon	"	12.09	8.69	3.4	72,000 " "	
60133	"	O. E. Barber	"	12.09	8.69	3.4	32,000 " "	
60134	"	J. B. Ritchie	"	12.81	8.81	4.0	17,000 " "	
60135	"	Wm. McGrath	"	12.38	8.78	3.6	76,000 " "	

Digitized by Google

Milk Above Standard (Continued)

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
60136	7-15-08	J. Roland	Burlington	13.32	9.32	4.	10,000 per cc	
60134	"	Bostwick Bros	"	13.05	8.85	4.2	5,000 " "	
60139	"	D. J. Millham	"	13.09	8.69	3.4	6,000 " "	
60141	"	L. E. Haynes	"	12.34	8.94	3.4	6,900 " "	
60143	"	D. E. Wright	"	12.57	8.77	3.8	68,000 " "	
60144	"	F. X. Saltus	"	12.32	8.52	3.8	48,000 " "	
60146	"	Baker & Tupper	"	11.6	8.2	3.4	20,000 " "	
60147	"	E O Reynolds	"	12.22	8.97	3.25	5,000 " "	
60148	"	Geo. Saiger	"	11.9	8.65	3.25	3,000 " "	
60153	"	C. C. Bliss	"	11.97	8.67	3 3	18,000 " "	
60154	"	H. H. Wheeler	"	13.08	9.28	3.8	4,000 " "	
60155	"	C. K. Tyler	"	13.30	8.9	4.4	22,000 " "	
60156	"	H. A. Bixby	"	13.18	8.88	4.3	100,000 " "	
60157	"	H. B. Chittenden	"	12.98	8.88	4.1	10,000 " "	
60158	"	Steele & Butler	"	12.81	8.81	4.	100,000 " "	
60160	"	J. Troville	"	13.05	8.85	4.2	16,000 " "	
60189	"	A. Morton	St. Albans				5,000 " "	Sample frozen. Count of no value
60439	7-24-08	J. D. Turner	Proctor	12.57	8.77	3.8		
60440	"	Wm. Fox	"	12.09	8.69	3.4		
60441	"	N. Spear	"	12.34	8.94	3.4		
60443	"	J. Stone	"	13.03	8.85	4.2		
60444	"	T. V. Bates	"	13.30	8.9	4.4		
60445	"	R. C. Mead Estate	"	12.81	8.81	4.0		
60446	"	R. J. Bruce	"	14.00	8.6	5.4		
60447	"	B. Hier	"	13.05	8 85	4.2		
60448	"	E. Myatt	"	12.22	8.72	3.6		
60449	"	C. Ladabouche	"	12.32	8.52	3.8		
60450	"	J. Kraus	"	12.81	8.81	4.0		
60701	8- 3-08	Submitted by Dr F. E. Clark	Burlington	14.02	9.02	5.	Normal	No tubercle bacilli. Bacteria 48,000 per cc.
60818	8- 6-08	W. J. Hicks	Bennington					Clean milk. Too old for complete examination
60819	"	J. M. Rockwood	"			3.8		" " " "
60820	"	Hiland Fay & Son	"			3.25		" " " "
60821	"	Geo. Davis	"					" " " "
60822	"	J. B. Parsons	"					" " " "
60823	"	P. Jacobs	"			3.25		" " " "
60824	"	F. Greenslet	"					" " " "
60825	"	S. E. Harwood (cream)	"					" " " "
60826	"	Martin Cone	"					" " " "
60827	"	Mr. Van Safford	"					" " " "

Digitized by Google

Milk Above Standard (Continued)

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
60828	8- 6-08	J. C. Colgate	Bennington			4.2		Clean milk. Too old for complete examination
60829	"	Mrs. Hogan (cream)	"					" " " "
60830	"	R. A. Crawford	"					" " " "
60831	"	O. O. Oakes	"					" " " "
60856	8- 9-08	E. Ladabouche	Proctor	13.05	8.85	4.2	Normal	Clean milk.
60857	"	N. Spear	"	13.18	9.08	4.1	"	"
60858	"	Wm. Fox	"	12.81	8.81	4.0	"	"
60859	"	J. Kraus	"	13.3	8.9	4.4	"	"
60861	"	B. Hier	"	12.81	8.81	4.0	"	"
60862	"	J. Stone	"	12.58	8.98	3.6	"	"
60863	"	F. C. Russell	"	12.58	8.98	3.6	"	"
60864	"	J. V. Bates	"	13.54	8.94	4.6	"	"
60867	"	R. J. Bruce	"	12.46	8.96	3.5	"	"
60868	"	R. C. Mead Estate	"	12.81	8.81	4.0	"	"
60869	"	J. B. Turner	"	13.04	8.64	4.4	"	"
60870	"	E. Myotte	"	12.21	8.71	3.5	"	" Refractometer 41 0
61000	8-13-08	Frank D. White	Rutland		cream	58.0	"	Submitted. Clean milk. Bacteria 2000 per cc. High quality
60999	"	"	"	13.54	8.94	4.6	"	" " " 2500 "
61006	8-14-08	A. E. Lamson	Burlington	12.81	8.81	4.0	"	" " " 52,000 "
61007	"	"	"	12.57	8.77	3.8	"	" " No count (spreaders)
61075	"	Submitted by H. L. Stillson	Bennington		cream	35.0	"	" " No tubercle bacilli found
61258	8-25-08	T. J. Hart	Rutland	12.09	8.69	3.4		Clean
61259	"	J. S. Grandy	"	12.46	8.9	3.5		"
61261	"	David Temple	"	12.81	8.8	4.0		"
61262	"	E. J. Walsh	"	13.54	8.9	4.6		"
61263	"	L. E. Lord	"	13.0	8.5	3.5		"
61264	"	Dr. Mead	"	11.97	8.7	3.25		"
61265	"	R. H Fintell	"	12.33	8.5	3.8		"
61267	"	Wilkins & Mead	"	12.09	8.6	3.4		"
61268	"	C. T. Marks	"	12.57	8 7	3.8		"
61269	"	I. A. Quigley	"	13.28	8.6	4.6		"
61270	"	Rutland Creamery	"	12.33	8.7	3.6		"
61271	"	D. J. Novak	"	13.05	8.8	4.2		"
61272	"	F. D. White	"	13.05	8.8	4.2		"
61273	"	G. A. Davis	"	12.57	8.7	3.8		"
61274	"	L. Avery	"	11.75	8.5	3.25		"
61275	"	A. Premo	"	12.10	8.9	3.25		"
61276	"	C. A Brackett	"	12.81	8.8	4.0		"
61277	"	C. O. Perkins	"	12.8	8.8	4.0		"

Digitized by Google

Milk Above Standard (Continued)

Laboratory No.	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Microscopical	Remarks
61278	8-25-08	David Lillie	Rutland	13.05	8.8	4.2		Clean
61279	"	Dunn Farm	"	12.80	8.6	4.2		"
61280	"	Leigh Hunt	"	12.22	8.9	3.3		"
61281	"	Ray Russell	"	12.8	8.81	4.0		"
61226	"	T. J. Morris	St. Johnsbury			9.2		Submitted. Rather high in sediment. Sample from top of can
61227	"	"	"	15.0 (?)	8.8 (?)	6.2		" " " " " " " "
61300	8-29-08	C. N. Bell	St. Albans	12.82	9.0	3.8	Normal	Clean milk
61302	"	J. N. Warner	"	12.22	8.9	3.3	"	"
61304	"	E. Ploof	"	13.81	8.8	4.0	"	"
61305	"	Z. W. Campbell	"	13.16	8.6	4.5	"	"

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

Volume IX. No. 1.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

Changes in the Laboratory Staff.

Prof. H. L. White, medico-legal chemist at the Laboratory of Hygiene since 1904, resigned July 1 to accept the position of professor of physiological chemistry in the North Dakota Agricultural College and School of Pharmacy. Dr. L. P. Sprague of the Laboratory staff has been appointed medico-legal chemist to succeed Professor White, and Mr. H. L. Thompson, A. B., has been appointed food and drug inspector and analyst. Mr. Thompson is a graduate of Leland-Stanford University and was recently in the employ of the California Board of Health as food inspector and chemist.

The American Public Health Association, at its annual meeting in Winnipeg elected the following officers: Dr. Gardiner T. Swarts, of Providence, president; Dr. R. M. Simpson, of Winnipeg, first vice president; Dr. Jesus Chico, of Mexico, second vice president; Major Charles F. Mason, U. S. A., third vice president; Dr. Charles O. Probst, of Columbus, Ohio, secretary, and Dr. Frank W. Wright, of New Haven, treasurer.

The convention reversed the committee's decision to meet at Milwaukee next year, and will hold its next session at Richmond.

The most important resolution passed by the convention follows:

Resolved, That this association heartily recommends to the American Congress the passage of such legislation as will tend to enlarge the scope and increase the efficiency of the public health and marine hospital service. To this end this association believes the power of the service should be increased; that provision should be made for the retention under pay of

Digitized by Google

members of the service, and that the salaries of said members should be made commensurate with the medical service of the army. The secretary is instructed to send a copy of this resolution to the chairman of the House Committee on Interstate and Foreign Commerce and the corresponding committee of the Senate.

The long-continued drought has brought about an increased demand for water analyses. During the first twenty-nine days of August, 103 samples of water have been received at the Laboratory. With such a demand for outfits, parties requesting water outfits must fill and return them at once.

During the past quarter food and drug analyses at the Laboratory of Hygiene have been made as follows: Foods, 106 samples, of which 74 were legal, 18 adulterated, 14 misbranded. Drugs, 91 samples, of which 60 were legal, 14 adulterated, 17 misbranded. Milk, 208 samples, of which 166 were above standard, 42 below standard.

The larger part of these samples were collected by the food and drug inspector. Some were collected by the health officers and some submitted. In all cases, notices of the results of the analyses were sent to the parties from whom they were purchased. To those selling adulterated or misbranded articles, warning notices were sent. These dealers have in all cases thus far investigated discontinued the sale of the illegal goods.

No cases of dirty milk have as yet been prosecuted, but all second offences have been reported to the state's attorney of that county. In Rutland county the state's attorney called a meeting of the milkmen and explained to them the course which he should pursue if they again sold dirty milk, with the result that the milk since analyzed from that county has been clean.

Special attention is called to the standard for ice cream, which is as follows:

ICE CREAM.

1. *Ice cream* is a frozen product made from cream and sugar, with or without pure gelatine and a natural flavoring, and contains not less than fourteen (14) per cent of milk fat.
2. *Fruit ice cream* is a frozen product made from cream, sugar and sound, clean, mature fruits, with or without pure gelatine, and contains not less than twelve (12) per cent of milk fat.
3. *Nut ice cream* is a frozen product made from cream, sugar and sound, non-rancid nuts, with or without pure gelatine, and contains not less than twelve (12) per cent of milk fat.

It is thus seen that pure gelatine is the only "stiffening" which can legally be used, a fact which does not seem to be generally known to ice cream manufacturers.

Digitized by Google

REPORT OF EXAMINATIONS MADE AT THE STATE LABORATORY OF HYGIENE.

Examinations of liquors from secretary of state from May 1 to September 1, 1908:

Conform to U. S. P. standard,	21
Do not conform to U. S. P. standard,	6
No standard,	21
Total,	48

Examination of liquors submitted by license commissioners from May 1 to September 1, 1908:

Conform to U. S. P. standard,	16
Do not conform to U. S. P. standard,	11
No standard,	5
Total,	32

Specimens examined from April 1, 1908, to September 1, 1908.

Water,		343
Typhoid:		
Positive,	50	
Negative,	235	
		285
Diphtheria:		
Positive,	281	
Negative,	637	
Suspicious,	12	
		930
Tuberculosis:		
Positive:		
Male,	93	
Female,	68	
Sex not stated,	13	
		174
Negative:		
Male,	202	
Female,	260	
Sex not stated,	28	
		490
Miscellaneous,		133
Malaria:		
Negative,		11

THE INTERNATIONAL CONGRESS ON TUBERCULOSIS.

An unusual opportunity will be afforded the medical profession and all persons interested in the study and prevention of tuberculosis to listen to the scientific men of the world who have made a study of this disease in all its forms. The preliminary program has just been issued. More than a hundred scientists from across the seas have signified their intention of

Digitized by Google

being present. Every physician, as well as others, should make an especial effort to be present. Anyone can become a member by sending to Dr. Henry D. Holton, Brattleboro, a member of the general committee, the fee of five dollars. This will entitle such person to all the privileges of the congress and also to copies of the transactions. Former congresses have published their transactions in three volumes; however, it is expected that it will require four volumes for the papers of this one.

The first general session, it is expected, will be presided over by President Roosevelt on September 28, in Washington, D. C. The sections will open on the same day and continue during that week, holding two sessions each day. There will be a general exhibition of pathological specimens, sanatoriums and other things of interest will be open for three weeks.

In connection with the congress a series of lectures will be delivered by eminent persons from foreign countries. These will be during the week beginning September 21. The names of the speakers and the cities in which they will lecture are as follows:

Bernard Bang, of Copenhagen, Washington, October 3. Subject, "Studies in Tuberculosis in Domestic Animals and what We May Learn Regarding Human Tuberculosis."

A. Calmette, of Lille, France, Philadelphia, September 26. Subject, "Les nouveaux procédés de diagnostic précoce de la Tuberculose."

Emil Coni, of Buenos Ayres, Washington, October 2. Subject, "La Lucha contra Tuberculosis en la Republica Argentina."

Arthur Newsholme, of Brighton, Washington, September 29. Subject, "The Causes Which Have Led to the Past Decline in the Death-Rate from Tuberculosis and the Light Thrown by This History on Preventive Action for the Future."

Gotthold Pannwitz, of Berlin, Philadelphia, September 24. Subject, "Social Life and Tuberculosis."

R. W. Philip, Edinburgh, Boston, October 6. Subject, "The Anti-Tuberculosis Program—Coördination of Preventive Measures."

C. H. Spronck, of Utrecht, Boston, October 7.

Andres Martinez Vargas, of Barcelona, New York, October 9. Subject, "Tuberculosis of the Heart, Blood and Lymph Vessels."

Theodore Williams, of London, Philadelphia, September 25. Subject, "The Evolution of the Treatment of Pulmonary Tuberculosis."

Dr. Maurice Letulle and M. Augustin Rey (joint lecture), Washington, September 30. Subject, "La Lutte Contra la Tuberculose dans les grandes villes par l'Habitation; methodes scientifique modernes pour sa Construction."

Dr. L. Landouzy, of Paris, Baltimore, October 5.

Dr. A. A. Wladimiroff, of St. Petersburg, Washington, September 28. Subject, "Biology of the Bacillus."

Prof. N. Ph. Tendeloo, of Leyden. Subject, "Collateral Tuberculsois Inflammation."

Digitized by Google

The Bulletin of Vital Statistics says: "Comparatively few people seem to realize the purpose for which records of deaths and births are collected by public authorities in all civilized countries. It is a disgrace of many years' standing that the United States possesses no reliable statistics for the country as a whole. There are only sixteen states whose returns of deaths are accepted by the Bureau of Vital Statistics at Washington as 90 per cent perfect, and not one whose returns of births are full and trustworthy. In Europe registration has been practically perfect for many years, and the filing of the appropriate certificates is recognized as a duty which is fulfilled as a matter of course by all the people. That America is a young country is no excuse, for good registration is secured in the British Colonies in South Africa, and some of the Central American republics put us to shame in this regard.

"One reason for the backward condition of registration of vital statistics of this country lies in the fact that legislation on the subject has in many instances been ill-advised and crude. And there is practically no uniformity in the methods or regulations adopted by the different states which make any pretense at all in collecting these data. Improvement in this respect is likely to follow the recent formation of a section on Vital Statistics in connection with the American Public Health Association.

"These records are of value in two ways, to the sanitarian working for the prevention of disease and the prolongation of life, and to the individual. Large sums of money are being spent annually in properly disposing of sewage, in filtering and protecting public water supplies, in disinfection, in carrying on the anti-tuberculosis crusade by sanatoria, dispensaries, educational measures, etc. How can we determine if this money is being spent to the best advantage unless we can see their effect upon the death rate? How can we really judge the health conditions, the sanitary aspects of a community unless we have an accurate birth rate to compare with the death rate?

"To the individual directly, too, registration of births and deaths is important. There is hardly a relation in life in which such a record may not be evidence of the greatest value. In the matter of inheriting property; in the administration of estates; as an insurance proof to establish the exact age of the insured; in determining whether individuals are of a legal marriageable age; in voting; in jury and military service; in many avenues of professional and official life; in carrying out the provisions of laws relating to education and child labor, and in numerous other ways records of this character are often of the highest importance. It would seem that there are but few people whose birth, marriage or death does not at some time become a matter of official or legal cognizance.

"In this connection we might also add that the certificates should be made out correctly and in a legible manner and only the best of ink should be used in making them. It very frequently happens that the department is called upon to correct errors appearing on original certificates, which had

Digitized by Google

crept in through carelessness of the informant, and in most instances the item that was incorrectly reported bore a most important part or affected the legality of the claim for which a certified copy was desired. It is therefore most important that extra care should be taken in making out the certificates and every item, no matter how trivial it may seem, should be filled out, when possible to obtain the information."

The following towns have failed to return the vital statistics for the first six months of the current year before September 1 as required by law:

Addison County: Addison, Ripton, Salisbury, Shoreham, Weybridge.
Bennington County: Bennington, Dorset, Sandgate, Stamford, Woodford.
Caledonia County: Hardwick, Ryegate, Sheffield, St. Johnsbury.
Chittenden County: Essex, St. George.
Essex County: Brunswick, Concord, Lemington, Norton.
Grand Isle County: Alburgh, South Hero.
Lamoille County: Belvidere, Eden, Elmore, Johnson, Wolcott.
Orange County: Fairlee, Orange, Vershire.
Orleans County: Albany, Barton, Jay, Lowell.
Rutland County: Benson, Proctor, Rutland (Town), Shrewsbury.
Washington County: East Montpelier, Warren, Waterbury.
Windham County: Jamaica, Putney, Rockingham.
Windsor County: Baltimore, Bridgewater, Chester.

CASES OF COMMUNICABLE DISEASES REPORTED TO THE SECRETARY OF THE STATE BOARD OF HEALTH FROM JUNE 1 TO AUGUST 31, INCLUSIVE

County	Measles	Whooping Cough	Scarlatina	Diphtheria and Croup	Typhoid Fever	Erysipelas	Chicken Pox	Mumps	Pneumonia	German Measles
Addison	.....	.....	2	.....	11	.....	.....	20	.....	.....
Bennington	12	5	.....	1	4	.....	3	5	1	.....
Caledonia	.....	88	8	16	34	.....	3	.....	.....	1
Chittenden	2	19	1	25	1	.....	1	11	.....	1
Essex	7	.....	.....	.....	6	.....	.....	.....	.....	10
Franklin	12	49	.....	2	1	.....	10	8	.....	2
Grand Isle	1	44	.....	.....	.....	.....	1	8	.....	.....
Lamoille	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Orange	7	11	16	4	3	.....	37	54	.....	16
Orleans	.....	.....	3	1	.....	.....	1	1	.....	.....
Rutland	6	33	.....	14	5	1	.....	1	.....	.....
Washington	6	29	.....	14	1	.....	2	19	.....	.....
Windham	1	1	1	1	1	1	15	25	1	3
Windsor	4	22	4	2	4	.....	.....	40	.....	.....
Totals	58	300	35	81	73	2	73	192	2	33

Digitized by Google

14,0979
1/2 B

UNIV. OF MICH.
DEC 11 1908

Bulletin No. 2, Volume IX.

Issued Quarterly By

Vermont State Board of Health,

December 1, 1908.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS.

Bovine Tuberculosis Relative to the Effect on the Human Subject, by V. A. Moore, V. S., Ithaca, N. Y. Page 3.

The Nature and Control of Bovine Tuberculosis, by Veranus A. Moore. Page 12.

Sanitation of Public Buildings, by Wm. Paul Gerhard, C. E., New York City. Page 30.

News Items. Page 49.

BRATTLEBORO, VT.

1908.

Digitized by Google

Digitized by Google

BOVINE TUBERCULOSIS RELATIVE TO THE EFFECT ON THE HUMAN SUBJECT.

V. A. Moore, V. S., Ithaca, N. Y.

It gives me much pleasure to visit the state of Vermont, because with the retiring of our director in Ithaca, we found it necessary to come to Vermont to get a man to succeed him. I have passed through here many times at night, but until to-day I have never had the pleasure of seeing the green hills, valleys and your lake. I assure you it gives me great pleasure to be with you.

The subject upon which Dr. Holton requested me to speak to you for a few minutes, is the relation of bovine tuberculosis to human tuberculosis. It is a subject which needs careful consideration by all interested in public health matters. There is no subject concerning public health which has given rise to such animated discussion and brought forth such a variety of opinion as this one of the relation which exists between bovine and human tuberculosis. Of all the diseases that affect man and beast, there is none in which so many people are so widely and deeply interested as they are in tuberculosis. It has been said on good authority that this disease alone has caused more deaths in the human family than yellow fever, Asiatic cholera, Bubonic plague and all the wars combined. It causes over one million deaths every year and over one hundred and thirteen thousand deaths in the United States annually. So we see what a tremendous evil we have to combat. It does not take hold of the old, but it is a great destroyer of the young, its victims being largely between twenty and forty years of age. Tuberculosis is one of the old diseases. It has a history.

The question we have to discuss this morning is that of the relationship which exists between the forms of this familiar disease as we find it in the lower animals and the human subject. We find away back in the history of the Israelites that they adopted laws to protect their people from this disease. In 1370, the Munich board of health passed an ordinance that the flesh of all animals suffering from this disease should be condemned, and that ordinance was adopted in other cities of Europe. In 1703, Florenus came forth with the statement that bovine tuberculosis was akin to syphilis in man, and caused the destruction of all animals known or suspected to be afflicted with the disease. In 1782 the Berlin board of health declared that the flesh of animals slightly infected with tuberculosis could be used for human food. This rule was adopted by other cities in Europe until it became the rule in the entire civilized world. The United States permits the use of the flesh of ani-

Digitized by Google

mals afflicted with localized tuberculosis, which is true of all the countries of Europe. In Germany they sterilize the meat of the animals afflicted with generalized tuberculosis and sell it. This condition in regard to meat exists to-day and the opinions concerning the relationship of human and bovine tuberculosis remain the same. In 1865, Villemin found that this disease was transmitted by inoculation from one animal to another. That was the first advance made. He found that by inoculating certain animals with the tissue of tuberculous people, the inoculated animal developed the disease. This strengthened the belief that the two were identical. The next step in advance was the discovery of the bacillus by Koch in 1882. When Koch found that tubercle bacilli in man and animals took what is now known as the tubercle stain and did produce the disease in guinea pigs, the conclusion seemed to be warranted that the germs in the two species were identical. Soon after this, the announcement was made by Koch that bovine tuberculosis was absolutely different from human tuberculosis; that there was no relation existing between these two forms. You will find this statement in his paper which he read in London in 1901. Then we have the statement of Von Behring, who holds that tuberculosis in man is largely due to tuberculosis in cattle; that the infection takes place during infancy or childhood, but remains latent until later in life, when it develops.

Thus we stand between these two opinions—one that there is no relationship between bovine and human tuberculosis; the other that human tuberculosis has its origin in bovine tuberculosis.

In 1896, T. Smith pointed out that there were certain differences in the virulence and morphology of the two. He reported in detail in *Experimental Medicine* a series of inoculations with pure cultures from man and from cattle. These showed that there was a distinct difference between the two. First, the bovine was different morphologically, shorter and thicker; second, it grew differently on blood serum (Dr. Smith told me that he believed he could invariably tell whether a culture of tubercle bacilli on serum was of human or bovine origin); third, the bovine bacilli were more virulent than those of human origin. When Smith undertook inoculations with the rabbit and cattle and other animals less susceptible, he found that the germ from the bovine specimen was very different from that of the human. In cattle he always produced the disease with the bovine bacilli, but rarely ever produced any disease in cattle with the human germs.

With these markings by which we can pick out the one from the other, the question of the frequency with which bovine tuberculosis exists in man seems to be a matter which can be determined and determined accurately. A large number of investigations have been made to show that bovine tuberculosis would change in its morphology. There is, however, as far as I am able to find, no literature on the subject where the proof is clear that the bovine germ does change in its morphology or virulence by

Digitized by Google

growing in the human subject. In the discussion of these points we have to be very careful not to confuse individual opinions with facts. The facts can be shown that these differences do exist in the bovine and human tubercule bacilli, and if these differences do exist, and if the bovine can be picked out and determined whether its origin was from another animal or a man, the question is pretty clear. We have to consider in drawing conclusions whether the germ in the tubercular individual is of the human or bovine variety. I have pointed out the differences that exist and those skilled in laboratory work will readily understand this difference.

We should understand that the growth of tubercle bacilli is different from the growth of colon or diphtheria bacilli. There are few organisms which are so difficult to cultivate and grow as the tubercle bacilli. It is very difficult to get the tuberculosis organisms from a tuberculous lesion to grow on artificial media. If we have it adapted to blood serum, it is not at all difficult to cultivate. We can carry cultures along with as much ease as with other bacteria. It is a curious thing, but about twelve years ago I tried to get a pure culture of tubercle bacilli, but found it impossible. I found that the original stock of the culture came from the same source. Very few workers were able to isolate the germ from the tissues. I do not suppose there are twelve men in this country who, up to ten years ago, were able to isolate this germ and get it to grow on artificial media, excepting in rare instances. In many laboratories there are men who are devoting their entire time to the study of this organism at the present time.

We have, however, the difference in the morphology, character of culture and virulence, by which to differentiate the two varieties of tubercle bacilli.

The Royal Commission studied sixty cases of human tuberculosis and in fourteen of them they found organisms which they believed to be of bovine origin. The German Commission studied fifty-six cases and out of these fifty-six, six were believed to be of bovine origin. Ravenel studied five cases and two were believed to be of bovine origin. Smith studied five cases also and one he believes to be of the bovine type. In the Bureau of Animal Industry in Washington, four cases were reported and two were believed to be of the bovine type. So out of one hundred and thirty-nine cases, twenty-seven were believed to be of the bovine variety. This will go to show that the frequency with which the bovine germ develops the disease in the human subject is not so great as was formerly believed.

We have a lot of cases reported where people from the cities have gone into the country for the summer and their children have drunk milk from tuberculous cows and have developed acute tuberculosis and died shortly after. The opinion has been expressed that they contracted the disease from the milk of these cattle. I have in mind a community where the milk is produced by one man who has four or five dairies. He also

Digitized by Google

sends milk to New York City. Nine years ago these cattle were tested with tuberculin; one half reacted and were destroyed. Four years later, seventy per cent of the four hundred cows reacted. Over eighty per cent of the calves were tuberculous. There were a lot of children in that community and they were all drinking the milk from the same cows, supposing it was very choice milk. After the test, the tuberculous animals were segregated and no tubercular milk was allowed to be sold for human consumption, but for four or five years these people had been drinking frequently of this milk which produced tuberculosis in eighty per cent of the calves, and there was not a single case of tuberculosis developed among those people. Since that time four years have elapsed and the health officer of the village told me within three months that they had not had a case of tuberculosis reported from any of these people. In Geneva there were a number of people drinking the milk from a very badly affected herd before they knew it; it has been three or four years since and not a case of tuberculosis has developed among them. In Japan cow's milk forms a very small part of the diet of the children. The average is about five cows to ten thousand people and the great majority never have any milk at all. Yet they have just as much tuberculosis among their children, and just as much intestinal tuberculosis in their adults as we have, though the question of milk and tuberculous meat is excluded. These things have to be considered. The conclusion seems to me to be justified that where the germ of the bovine type is found in the human subject, it is evident those individuals were infected from the bovine source. If that is the case, we know that now and then the germ does cross over from cow to man. It does not make any difference how frequently that happens—whether it is one in ten or one in a hundred; if there is any danger, as there seems to be, of the bovine germ being transmitted to the human subject, we certainly do not want the milk of tuberculous cows.

DISCUSSION.

C. W. Peck.

My object in writing this paper is to call your attention to some points which I think need emphasizing in the diagnosis and treatment of tuberculosis. A year ago I read a short paper before our health officers' meeting, discussing the necessity of an early diagnosis, and the way to make it, emphasizing the value of the physical signs as a means of an early diagnosis in this disease and their superiority over the symptoms, all of which I still believe. The following case illustrates the value of the physical signs in making an early diagnosis under difficulties.

April 9, 1908, I was called to see Annie B., age 17, a Polander who could neither speak nor understand a word of English, and as no interpreter was to be had, it became necessary for me to depend entirely

Digitized by Google

upon the physical signs to make a diagnosis. The patient was coughing and raising bloody sputa. Her temperature was sub-normal, being only 96. Pulse 100 per minute, regular and of fair strength. My first attention was called to her lungs. I found on examination a general bronchitis, also a well-marked expiratory murmur over the upper lobes of both lungs, with a high pitch; a well-marked bronchophony with slight dullness on percussion, which told me there was undoubtedly an inflammatory deposit in the upper lobes of both lungs, with a consolidation of the lung substance. Her temperature remained sub-normal for eight days, being from one half to two and one half degrees below normal both morning and evening, a very unusual condition. I am unable to see how I could have made a diagnosis of tuberculosis as I did without a thorough knowledge of the physical signs of auscultation and percussion. I sent some of the sputa to the State Laboratory, where my diagnosis was confirmed. Why did I conclude it was a tubercular deposit in the upper lobes of the lungs rather than an ordinary pneumonia? First, the locality of the disease in the lungs was characteristic of tubercular deposits. I never saw a deposit from acute pneumonia form in the upper parts of both lungs at the same time and go on to hepatization. Second, the temperature remaining sub-normal. A sub-normal temperature is quite characteristic of tuberculosis at some parts of the day, but rarely so in acute pneumonia. It has been my experience in treating this disease that the incipient cases are quite prone to carry a sub-normal temperature in the morning, which I think is quite characteristic of the disease. The more recent methods of diagnosis by tuberculins either under the skin or in the eye are not in very general use among general practitioners. Later on when we come to understand and use these new methods we may be able to make a diagnosis much earlier, but even then it is very important to be able to determine the condition of the lung by a physical examination.

Since Koch discovered and forever settled the question that tuberculosis is a germ disease, we have been able to study and treat this disease in a very progressive and successful manner. Twenty-six years of careful clinical observation has put us in command of the situation. The question to-day that is being asked the medical profession is, "How can we recognize this great destroyer of humanity in its earliest stages?". That we can recognize it sufficiently early for its successful treatment has been demonstrated many, many times (provided the opportunity is given). That we can treat it successfully when thus recognized is also a well-known fact, as has been proven by the recovery of many thousand cases when such opportunities are given us. That we are in possession of the facts how to prevent the spreading of this disease, could we but be possessed of the necessary means, is no longer a debatable question. It seems to me that the great question concerning the successful management of this most dreaded of all diseases is fast passing from the hand of the medical man to that of the state. As a rule the successful medical men of the age

Digitized by Google

who have spent their time in studying the medical questions of the day have not been money accumulators. They may know the ways but have not the means. It therefore belongs to the state and nation to supply the necessary money to accomplish the great end sought, which can be obtained in no other way. It is no longer the medical question it was a few years ago when we were in doubt as to the diagnosis, the treatment and the curability of the disease. It is now a question of means to an end. It has passed largely from a medical to a financial question. Doctors cannot erect and maintain sanatoriums. Doctors can equip them. They can direct, but the means must come from the business man, the philanthropist, the state and the nation. The four or five hundred victims who fall prey to this disease annually in this state can no longer be charged to the medical profession, but to the state. The state has had the opportunity for the last six years to correct this condition and it must be held morally responsible for not doing so.

In the fall of 1902, a bill was introduced into our state Legislature asking the governor to appoint a Tuberculosis Commission for the purpose of paving the way to a state appropriation for a sanatorium to care for such cases of tuberculosis as might naturally come before it. That commission, diligent and faithful to its charge, has labored earnestly for this much-needed institution, but in vain. In vain have the earnest men and women in our state watched and waited for some sign of a state institution to fill this much-needed want, to care for these poor unfortunates, but to no purpose. Can we do more? Give us the means and in four years we will diminish the annual death rate in our state 50 per cent. This commission has gone so far as to figure the intrinsic value of a human life to our commonwealth, and still we stand silent and unmoved at this dreadful spectacle of unnecessary death when it could all be changed and the saving of human life would almost begin with the laying of the corner stone of such an institution. Shall we continue to shirk this responsibility to the coming generation? Shall we give them a stone when they ask for bread? The question, "How much claim have the poor unfortunate consumptives in the last stages of this disease upon the finances of the state?" I cannot answer. Just how the state can afford to allow these cases, uncared for, and unguarded from scattering the germs of death, is more than I can understand. We spent money and sacrificed lives to shake the Spanish rule from the Cubans only a few years ago. Are not Vermonters as good as Cubans? What doctor has not seen more than one mother or father go down in poverty leaving the germs of this disease with their families and they powerless to do otherwise for the want of means? Is money in the hands of the state more precious than the lives of her citizens? This is no imaginary picture but a reality which has happened in the practice of every doctor in this room who has had much experience in the treatment of this disease. Can we hand down to posterity a nobler gift than that of protection and safety for those who are

Digitized by Google

to come after us? Can we afford, knowing as we do these dangers to the coming generations, to allow them to go unguarded? It is no longer a question of *what* we need. The state says, "Can we afford it?" I am asking, "Can we afford *not* to afford it?" Are we waiting for another Senator Proctor, whose name has been made dear to the coming generations by his most thoughtful gift to our state? A sanatorial monument, although of stone, its first and last impression upon all observers is the tender, generous and loving thought he had for his fellow man. In the last number of the *American Medical Journal,* May 30, can be found an article explaining the methods and means adopted by the State of Pennsylvania to remove this disease from their state. I will not quote from this article, as it is within your reach and can be read by all at their leisure. Suffice it to say, the first thing they did was to appropriate a million dollars and the motive behind this appropriation was to help those who cannot help themselves. Cannot Vermont act on the same principle? Are our obligations any the less obligations because we are a smaller state and have less means? It has long been my idea that the dangers from this disease came from the advanced cases. The incipient ones can care largely for themselves; at least, they are not dangerous to the community, they cannot communicate the disease. The advanced cases can and do. Whole families are sometimes poisoned by a single case which could be obviated by assistance, but the state must move in this matter. Money must be had. It is a state and national calamity, and must be fought out on these lines. The value of individual contributions to such an end cannot be properly expressed in words, and the man or woman who can and does this great philanthropic work can be properly rewarded only in heaven. To recapitulate. The question of the communicability of this disease from man to man, from animal to animal, from man to animal and from animal to man, is no longer a debatable question, but a fact upon which we can always depend when the proper conditions are furnished. That we can detect this disease in its first stages, that it can be cured, that it can be prevented, that we can diagnose it in time to cure and prevent its spreading if opportunity and means are given us, is true. These facts are the product of the last twenty-six years' hard study by the medical profession, but this work must stop here if the necessary means are not put in our hands to accomplish these ends. It is now a question, Shall we go on, or stand still for the want of means? Shall we continue to value money more than life? Shall not Vermont, in her coming Legislature this fall, rise to that level which has been her characteristic in the past and adopt some system which shall reflect credit upon the state and give protection to her unfortunate and helpless victims of tuberculosis?

H. D. Chadwick, M. D., Pittsford.

Certainly Professor Moore has left nothing to be said on bovine tuberculosis as related to human infection.

Digitized by Google

If the two races of bacilli were equally virulent for humans, tuberculosis would be much more prevalent than it is at the present time. The bovine tuberculosis that has been discovered in the human race, has been, I think (perhaps with one exception), found in infants and children. As far as I have any knowledge, in only one case have bovine bacilli been isolated from the sputum. That shows that bovine tuberculosis is less virulent to the human race and that in childhood infection gains easier access. Most infants who die from tuberculosis, die from a general infection; as they grow older it becomes localized. Later on in life it is confined principally to the lungs. Dr. Theobald Smith has pointed out the fact that, being a true parasite, it needs a place of exit as well as a place of entrance for prolonged existence.

In stamping out tuberculosis, either of the bovine or human type, all the authorities agree that it can best be done by segregation of the infected individuals.

If all the human race could be tested with tuberculin and those reacting given the treatment which is now in vogue, most of the incipient cases would, without doubt, be cured. Of those farther advanced, a smaller percentage would be cured. Those very far advanced would, of course, die, but if these could be segregated, they would cease to be a focus of infection to those about them. That can, of course, only be carried out gradually, but much can be accomplished if the health officers would look after tuberculosis as carefully as they do after such contagious diseases as diphtheria, or scarlet fever, which are now less of a menace to the human race than tuberculosis.

A great advance would be made if, whenever a person dies of tuberculosis, the children and other inmates of the house or family could be carefully examined for any signs of tuberculosis or any physical signs of the disease, such as a loss of weight, anæmia, persistent rise of temperature, etc., and if a diagnosis is doubtful the tuberculin test used. A greater number of cases could thus be isolated early and given the proper treatment.

I hope this will be eventually carried out, and when it is, we shall make a great stride in curing tuberculosis, which now frequently is not discovered until the disease has become too far advanced to yield to treatment.

Dr. W. N. Bryant, Ludlow.

The question of bovine tuberculosis hinges upon this one point, its transmissibility. I am free to say that it is a technical and scientific question, upon which the average man has no business to formulate an *independent* opinion. It is a question on which we must take our opinions from those who have had more opportunity for observation and wider fields for investigation—we must take them second-hand.

A careful study of the literature of this subject shows that the great

Digitized by Google

consensus of professional opinion to-day is that bovine tuberculosis is, under certain conditions, transmitted to the human family. Is it or is it not? We must get the opinion of the majority of those best qualified to judge. I am content and I think we should all be content to regard that matter as settled. When we have such reputable men as Ravenel, Koch, Smith, Ernst, Osler and scores of others going on record with their experiments, I am content to accept their opinion. The Royal British Commission, appointed in England to investigate this matter after the outpour of Koch some years ago in London, have stated that they believe and that they find that there exists what they term two strains of tuberculosis, the human and the bovine, and although it is possible for these two strains to mingle, it is not usually the case. They have found a great variance in the virulence, but the great fact that they *may be* transmitted from animal to man, is the thing which should interest us particularly.

Ernst has shown that milk taken from a tubercular cow has contained tubercle bacilli without the cow having tuberculosis of the udder. Another investigator shows that tubercle bacilli have been found in butter from the milk of a tubercular cow. Those are facts which we should remember. I think it is Ernst who quoted that a man who had a large herd of cows found a certain number tubercular. He segregated these and fed the milk from them to pigs, and every pig brought up on this milk developed tuberculosis. Of course it was of the bovine form. So if hogs are so susceptible, it is suggestive that the human family may also be, as physiologists tell us that the digestive organs of men and swine are very similar.

Another point is the matter of tubercular meat. The matter of diseased meat to the average layman is something to be dreaded. In fact, it appeals more strongly to them than the question of milk from tubercular cows. As a matter of fact, it is of much less importance, for it is usually cooked, which kills the bacilli, consequently the danger is largely eliminated. As health officers we find two classes of people to deal with; one easy to deal with, as they wish to keep the provisions of the law, and another class who seek to evade it. Illustrating the first class—a man butchered a cow. Not liking the looks of the meat he asked me to go down to his place and take a look at the beef. It seemed all right in every way save that the liver was infiltrated with sacs of cheesy material. He knew this was not all right and did not want to sell it, so came to me of his own accord. I sent some of the material up to Dr. Stone at the State Laboratory; he examined the material and sent me a report that it was diseased meat. This man was easy to get along with. Another case which I will cite is of the second class. A traveling butcher sold to a woman a joint from which steak had been cut. The woman did not like the looks of it but the butcher assured her it was all right, and she cooked it. In cutting the meat up for the table she ran across a lot of cheesy matter. She reported this to me. I took some of it and sent this to Dr. Stone. He reported it as being diseased meat, probably tubercular, and stated that the man

Digitized by Google

selling it ought to be prosecuted. The butcher who sold the meat knew it was diseased. I reported the case fully to the grand juror, and he to the state's attorney, but nothing was done in the matter.

This is a question of vital importance to us in our work as health officers, and in view of the facts already known we are justified in speaking in the strongest terms of the danger of using tuberculous milk.

The movement in which we are engaged is the elimination of this great plague and as such we can not afford to take any chances. We should feel much encouraged at the results obtained and when we see the great decrease in the last twenty years, with the little knowledge we have had, it seems to me that with increasing knowledge, the outlook in the near future for a splendid fruition of our hopes and of our labor is both bright and hopeful.

THE NATURE AND CONTROL OF BOVINE TUBERCULOSIS.

BY VERANUS A. MOORE.

Bovine tuberculosis is one of the oldest diseases of animals of which we have knowledge. It was known to the Israelites in the days of their captivity, and from then until now it has been a subject of much thought and investigation. The opinions that have been entertained concerning it have been vacillating, the decrees of one century as to its supposed infectious nature and the use of the flesh of the infected animals often being reversed by those of the following century. History shows that up to the time of the introduction of modern scientific methods for the study of disease, there was little that was definite in our knowledge of tuberculosis beyond the fact that it was a very destructive disease of both men and cattle.

In 1865, tuberculosis was demonstrated to be infectious. In that year, Villemin showed that it could be produced in healthy animals by inoculating them with pieces of tuberculous tissue. His results were confirmed by a a number of other investigators. In 1882, Robert Koch discovered the bacillus of tuberculosis and thus completed the already abundant evidence that tuberculosis is a specific, infectious disease. The finding of its specific cause led to many careful and extended investigations into the nature of tuberculosis, the means by which it is spread, and the measures that must be adopted if its spread is to be checked. The results of these numerous inquiries have given us very definite knowledge of the nature of the disease. It is believed that this knowledge, if properly used, will enable every

Digitized by Google

cattle owner to eliminate tuberculosis from his herd if it is there, and to keep it out, if it is not there.

Tuberculosis is caused by the bacillus of tuberculosis. It is a very small rod-shaped micro-organism. It is so minute that ten thousand of them might be placed end to end within the linear distance of an inch. This organism has a peculiar property of retaining the stain used for coloring it, so that it is possible to distinguish it from other bacteria by a microscopic examination. It will kill guinea pigs when a very few of the bacilli are injected into the subcutaneous tissue. It is also fatal to other animals. The tubercle bacilli that produce tuberculosis in cattle differ very slightly from the bacilli that cause tuberculosis in man, but it is known that they belong to the same species.

Animals become infected with tubercle bacilli largely through the digestive tract. The infection by means of inhaling particles of dirt or dust carrying bacilli, or by getting them into wounds of the skin, is possible but certainly not very common. Healthy cattle "nosing" with infected ones or feeding and drinking after them is the most usual method of contracting the disease. Feeding calves with milk from tuberculous cows is a common means of propagating tuberculosis in a herd. The slow development of the disease makes it possible for calves to be infected and frequently not to show evidence of tuberculosis for many years. I have known of a very large percentage of calves that were fed upon milk of diseased cows to give a good tuberculin reaction (thus showing they were suffering with active infection) before they were six months old. This is believed to be one of the very important ways by which the disease is disseminated in breeding herds.

The real problems relating to tuberculosis before the cattle owners are the prevention and the eradication of this disease. They resolve themselves into the best methods to follow under two distinctly different conditions, namely: When the herd is free from tuberculosis, and when a greater or less number of animals are already affected.

In preventing the entrance of a specific disease, it is simply necessary to keep out the microbe that produces it. The important question to consider in this connection is, how to keep it out. I have already mentioned the two most common channels that are known through which tubercle bacteria gain entrance to a herd of uninfected cattle, namely, through the feeding of calves with the unsterilized milk from creameries and possibly the whey from cheese factories where the milk from tuberculous cows is received, and the introduction into the herd of a tuberculous animal or animals. The prevention by cutting off these channels of infection is not difficult or expensive compared with the elimination of the disease if introduced or the loss it will occasion if allowed to remain.

To guard against the first it is necessary to sterilize the milk fed to calves, unless it is known that the animals from which it came are free from the disease.

Digitized by Google

To avoid the second danger, it is necessary to have all the animals carefully examined and tested with tuberculin before bringing them into the herd. The tuberculin should be applied by a competent person who appreciates the necessity of complying with every precaution necessary for obtaining the correct results of the test. If the cows come from a tuberculous herd they should be retested in a few months.

In regard to tuberculin, the reagent used to detect the presence of tuberculosis, it may be said that it is the liquid, usually glycerinated bouillon, on which the tubercle bacilli have multiplied or grown. After the growth is completed the cultures are boiled to kill the bacilli, filtered, and the filtrate evaporated over a water-bath, then filtered through a Pasteur or Berkefeld filter, which removes any tubercle bacteria that may be present, and a little carbolic acid or thymol is added to preserve it. The active principle of tuberculin is a substance resulting from the multiplication and maceration of the tubercle bacilli in the liquid. In its preparation it is necessary that the tubercle bacilli "grow" sufficiently, which usually requires several weeks before the liquid is used. The flasks containing "cultures," as they are called, are, when ready, heated for some time at the boiling point. The liquid is then filtered to remove the bacilli and the fluid is then concentrated over a water-bath. It is again filtered through a porcelain filter and stored. It will be noticed that tuberculin is heated at two different times during its preparation sufficiently to kill the tubercle bacilli, if any escaped the first filtration. When ready for use tuberculin is a clear amber-colored liquid. The intensity of its color varies according to the amount of blood pigment in the meat from which the bouillon was made.

Tuberculin cannot possibly produce tuberculosis, because it does not contain any tubercle bacteria. There is no evidence that in cattle it excites a latent tubercle into activity, or that it tends to make the disease worse. It is used the world over and yet no authentic report of injury caused by its use has been recorded.

The use of tuberculin is to protect and save cattle, not to destroy them. It enables one to pick out the infected animals before the disease has advanced to such an extent that they are worthless. It is because of its great diagnostic power that the conservative method of handling tuberculosis known as the Bang method is made possible.

There are at least three procedures to choose from: the total destruction of the infected animals; their slaughter for beef under proper inspection, procuring the meat values of those that are only slightly infected; the application of the Bang method.

In herds in which the disease already exists to a greater or less extent the problem is far more difficult. The diseased animals sooner or later become a source of expense and loss rather than profit. The danger of spreading the infection to calves, swine and possibly children by the use of infected milk is too great to take chances with tuberculous cows.

Digitized by Google

The loss of valuable strains of animals and the stigma of having a diseased herd are further reasons for eliminating the disease. It is clear that a dairyman cannot afford to have tuberculous cows in his herd. The question is, How can a man who has such a herd eliminate the disease with the minimum loss?

The Bang method for handling tuberculosis is the procedure recommended and carried into effect in Denmark by Professor Bang of the Copenhagen Veterinary College. The object of this method is to replenish a tuberculous herd with as little loss as possible. It requires that the entire herd be tested with tuberculin and that all animals which show physical symptoms of the disease shall be destroyed. Those which give a tuberculin reaction but which exhibit no evidence on physical examination of their being tuberculous, are isolated. They are kept for breeding purposes. The reacting animals are carefully watched and if any of them develop obvious symptoms of the disease they are slaughtered. The stables from which the diseased animals are removed are thoroughly disinfected.

This method, which is feasible in the case of valuable herds, has been applied with success at the Wisconsin Agricultural Experiment Station, at the New York Agricultural Experiment Station at Geneva, and by several private cattle owners. The Hon. W. E. Edwards of Rockland, Ontario, Canada, used it in the handling of his valuable herd. In 1903, at the meeting of the American Veterinary Medical Association, he read a forceful paper on his experience with the method, a few lines of which I quote: "The question arises, Can tuberculosis, one of the most constant diseases present in our animals, be eradicated? My answer is yes, most emphatically. I am fully convinced of the reasonable possibility of the eradication of tuberculosis from our herds and of the maintenance of sound herds."

DISCUSSION.

C. L. Beach.

I have been very much interested in Mr. Moore's lecture but I hardly feel competent to discuss the subject. I am interested in this matter, however, first, because I am a dairyman, and second, because I am a consumer of dairy products.

Tuberculosis is found more often in dairy cattle than in others and for several reasons. First, there is a larger exchange of cattle. Many dairymen, especially in the East, who are selling milk in the open market, make a practice of buying their cows rather than raising them. The dairy animal is kept warmer, housed more closely than is the case with the beef animals. The disease may be spread likewise among dairy herds through the exchange of infected milk from the creamery. Dr. Moore spoke in regard to the relation of tuberculosis and the ventilation of stables. He

Digitized by Google

stated that poor ventilation would not produce tuberculosis; neither would good ventilation keep a herd free from it. Animals which are stabled in well-ventilated and well-lighted barns, however, are better able to resist the disease if the germs are present. As regards the human family, physicians are advising people to sleep out of doors or with windows open. In a similar manner cattle which are robust, full of vitality and which are stabled in well-ventilated and airy barns are better able to resist disease than those otherwise taken care of. Some mention has been made of the fact that hogs contract tuberculosis when fed milk from tuberculous cows. I do not see why this may not be true of human subjects. What can we do about it? What can the State Board of Health do to protect the people of Burlington or any other city and assure them that they are getting good wholesome milk? We are not ready for any drastic measures. I do not see why it is not possible, however, to inspect the different dairies and report the conditions in regard to the health of the herd, care of utensils and other matters. Personally I prefer to know whether the milk which is brought to my door is produced by a herd free from tuberculosis rather than to know the total solid or fat content. The United States Department of Agriculture has devised a score card to be used by milk inspectors. On this card 25 points out of 100 relate to the health of the herd. It provides that a herd which is not tuberculin tested shall not score more than 10 points under this head. Where a herd is not tuberculin tested, therefore, the total score, if all other conditions were perfect, would be only 85. I am quite sure that most dairymen would not be satisfied with this rating.

Joseph L. Hills, Director Experiment Station, Burlington.

I want to make four points very briefly.

First. As to buying tested cows. When one buys upon another's say-so as to testing, he really pins his faith upon the veracity of the seller. Insist on veterinarians' reports and see that they fit the animals. I know of one case of a milkman who, a good many years ago, assured his patrons that his cows were all tested and, I judge, gained some trade upon the basis of that assertion. And so they were tested—with a Babcock tester.

Second. As to one's ability to maintain a herd free from tuberculosis. The station herd was killed early in 1894. The barns were thoroughly disinfected and new animals added only upon test. We test yearly or oftener and have not found a case of tuberculosis in fourteen years. It is entirely possible to clean a herd up and keep it clean.

Third. As to the law. It strikes me that the present state enactment governing the control of tuberculosis is faulty in that sufficient power is not given the commissioner to determine the thoroughness of disinfection of premises. It is in my judgment almost a waste of state money to test a herd, to kill it and to put new animals in an infected or but imperfectly

Digitized by Google

disinfected barn. The commissioner should be empowered to inspect and purify the premises as well as the herd.

Fourth. As to the possibility of conferring immunity. I wish that Dr. Moore would let us know his judgment as to the possibility of conferring immunity to this disease by the use of the Von Behring or other serum.

Mr. George Aitken, Woodstock.

I am rather at a loss to know what to discuss, as I have just come into the meeting and am not familiar with the line of talk which has been given. I simply heard the answers to the questions, so I may in my remarks repeat some things which you have already heard, and I hope you will pardon me if I do.

In regard to the questions which Professor Moore has answered, I can fully agree with him in almost everything that he has said. As to the method of keeping the cows clean, one thing surprised me, and that was that he did not think ventilation of the barns was of much consequence. We have been taught that ventilation was very essential in keeping our herds healthy, and from my own experience and observation I am certain that the germs of tuberculosis will breed much more rapidly in dark, ill-ventilated stables than they will in clean, light, well-ventilated ones.

I have had a theory for a great many years that tuberculosis was primarily a bovine disease, and that the human tuberculosis originated from contact and using the products of the cows.

I advanced that theory quite a number of years ago and got pretty well laughed at, but I am not subject to quite as much ridicule to-day, as some of our leading scientists are beginning to have the same idea that tuberculosis was originally a bovine disease.

It is one of the laws of nature that parasites, living on animals or plants, are subject to the same diseases as the animals or plants they feed upon. Now I think you will all agree with me that the human being is a parasite on the cow—as he drinks the milk, eats the butter and cheese, then the old cow herself, and formerly used to clothe himself with her skin.

Professor Moore instanced the fact that cows kept out of doors through the whole season, contracted the disease which spread through the entire herd. It was formerly supposed that cattle kept in the open air all the time were not subject to the disease; that even if it were introduced into such herds it would not spread. But the more we learn about the disease, the more apparent it becomes that it will spread from contact no matter under what conditions the herd is kept. That the disease can be communicated to man from the cow and from the cow to man, if given the opportunity, has been pretty well demonstrated.

I have had that brought home to me very strongly, and within the last two weeks I was present at the climax of a tragedy—when I went to

Digitized by Google

help bury a man who died of tuberculosis; he was the last of a family of seven who had all succumbed to this disease.

The history of the family is pathetic and very interesting to me. About twenty-eight or thirty years ago a family of emigrants moved to Long Island where I was then living. There were seven children besides the father and mother in the family. The father purchased a cow for family use. They were near neighbors of mine and the first time I saw the cow in the field I noticed that she showed a tendency towards tuberculosis. I told the owner that I did not think it was a safe cow where young children were to use the milk, but as the cow appeared well and gave a good flow of milk, he thought I exaggerated the danger, and in fact did not believe the disease could be communicated from that source.

Later I examined the cow carefully and found on sounding her lungs that they were affected; she lived, however, for two or three years and finally died on the place; I opened her and made a thorough examination and found it about as bad a case as I had ever seen.

All of those seven children have died of tuberculosis. When they came to Long Island they were as healthy looking a lot of youngsters as I ever saw. It took hold of the youngest first, who was possibly three or four years old. After an interval of a year or so the second youngest died, and that family has been dropping off, until the oldest was buried about two weeks ago. The father and mother are alive to-day and absolutely healthy. So far as I can learn there was no tuberculosis in the family of either father or mother.

Of course it might be possible that the children contracted the disease from some other source, but knowing the circumstances of the case as I do, I am certain that they contracted the disease from drinking the milk of that cow, or by attending her, as they took sole care of her. And this is simply one of the cases I might quote where I am certain that human beings have contracted the disease from the cow, and I do not think we can be too particular in preventing the milk from tuberculous cows being fed to children.

I feel this so strongly that I would just as soon think of feeding a child of mine poison which I knew would kill, as to feed it milk from a tubercular animal.

While cattle commissioner I had the opportunity of studying the disease in all its forms, as we killed hundreds of animals, which were all dissected and the disease located, and while engaged in this work I noticed a peculiarity of the disease which leads me to think it invariably attacks the weakest part of the animal body.

This was that the cows in certain herds would have the disease located in the same organs. This was more noticeable in herds that were bred along the same lines for a number of years, and where inbreeding was practiced. In slaughtering such herds, if we found the first cow to be

Digitized by Google

killed had the disease in the udder, for instance, we were almost sure to find the disease located in the udder of almost every cow killed. In other herds we would find the disease confined to the lungs, and others again in the intestines, and so on.

In regard to the stables Professor Moore spoke of, as being built in a sanitary condition, well lighted and ventilated, where the disease seemed to be almost as prevalent as in badly constructed barns, I would say that I have had much the same experience. I have seen animals kept in actual palaces, under conditions practically perfect as regards light, air and cleanliness, and yet those animals would all be drinking out of the same trough, the water would be in front of the cows at all times, running from one receptacle to another, from one end of the barn to the other; there is no better way to pass the disease along than this, as the cows affected with tuberculosis will invariably cough when drinking, and if the germs are thrown out they are carried from cow to cow.

We have noticed several instances where this condition of affairs was pretty thoroughly demonstrated, where a diseased cow introduced into a sound herd would communicate the disease to cows on the side to which the water ran, while those standing on the other side would be free. So that no matter how thoroughly the stables are built, if these little things are overlooked, it is only a question of time when the whole herd will be affected after the disease is introduced.

That animals will contract the disease from contact under conditions where a few years ago we would have considered it impossible, was forcibly brought to my notice last winter while in Africa. The cattle there are out of doors all the time in a dry climate where it very seldom rains and the sun shines every day in the year, and I was informed that both cattle and human beings were subject to this disease.

Question from the Audience:

I would like to ask the symptoms that cow had which led you to believe she was affected with tuberculosis.

Answer:

I have had something to do with cattle all my life, can generally tell from the appearance of the cow whether or not she is in good health. When I first saw this cow she attracted my attention by her anæmic condition; in moving her I found her breathing affected; in fact, it was perfectly plain to me that she was suffering from tuberculosis.

The man who is thoroughly familiar with cattle will be able to tell whether she is in a healthy condition or not, just as a physician can tell by noting the general conditions of a patient, although he may not be able to tell just what the trouble is.

I would like to say a word in regard to the present law in this state.

Digitized by Google

We worked strenuously to get a law which we thought would be right, but did not quite succeed. I agree with Professor Hills that we can clean our herds and keep them clean. We have never had the disease except as it was brought into our herds by purchased animals. Several years ago I traded bull calves with one of the leading breeders of the United States. The calf had been tested with tuberculin and so I considered him perfectly safe to bring into our herd, but whether this calf had the disease when he was shipped or contracted it in transit I do not know; however, he developed tuberculosis, as did seven heifers which were running with him in the pasture. I had the bull killed and found his lungs badly affected; they had begun to break down. The seven heifers were valuable animals which I thought I would experiment with rather than kill them. I put them on a hill farm away from other stock and gave them the cold air treatment; kept them in an open yard all winter, with open shed for sleeping quarters, gave an abundance of good nutritious food, of which they ate more than those kept in warm barns.

I tested them next spring and three of the seven reacted; these three were killed and one of them was very bad; in fact, would have died soon anyway, as the disease had run a very rapid course.

The four which did not react I kept on the hill farm another season; one we found to be a rather poor specimen, one that I did not want to keep in the herd and did not want to sell, so thought it would be a good time to find out whether the disease had simply been arrested or cured. Three medical men and a veterinary held a post-mortem on that cow. They could find no sign of the tubercle being encysted, as I rather expected they would. The only sign they could find of the disease was a scar on one of her lungs, but it was all healed up and perfectly healthy. The others are in the herd to-day and have never shown signs of reaction, and I have no doubt are perfectly healthy.

But I started to say something about the present law. The trouble as I see it is that the cattle commissioner has not enough authority, and the remuneration given for diseased animals is out of all proportion to the real value. The law says, "They shall receive 75 per cent of the value if it were well." Here is where the law does not work properly.

The farmer does not care whether he has the disease in his herd or not, because he can sell his cattle to the state higher than he could otherwise. The appraisers invariably give the farmer the benefit of the doubt and the cattle are appraised at a much higher figure than their actual value. I would be in favor of having a law passed that would give only 50 per cent of the value of a healthy animal and have the test compulsory.

Give the commissioner power to go in and test the herd when they are led to believe the disease exists; in this way we would be able to clean up the state and keep it clean.

In regard to the buying and selling of cows, we are situated a little

Digitized by Google

differently in this state than the Professor is in New York. We are breeders of cattle. We keep our young stock and sell our mature cattle largely to the city dairy. The farmers make quite a profitable business out of breeding, so that the menace of buying diseased animals is not great here in Vermont.

There is no question but that with the tuberculin test we can keep the disease from getting into the state, and if farmers would look at it from a business standpoint, they would not object to having their herds tested. In that way Vermont would secure a clean bill of health and eventually it would bring about a boom for our cattle, which would be the biggest financial success we ever had.

E. M. Pike, Mendon.

Something has been said with regard to the appraised value of condemned stock. I would like to ask if there was any restriction on the value placed on animals.

Mr. Aitken.

In reply to the gentleman's question I would say that there would have to be a limit placed, so $50 was set down as the price paid for an animal. There had to be a limit for this reason, there would be no way of determining the value of thoroughbred animals. A year ago last May we purchased a bull calf at a cost of $1100; if he should contract tuberculosis and we demanded full value we would bankrupt the state, so we had to have a limit. Those who have valuable stock will take better care of them and see that no diseased animals are allowed in the herd.

F. L. Davis, Secretary of the Board of Agriculture.

I supposed we were to have the talk by Professor Moore this evening, and that Mr. Aitken and myself were to ask a few questions.

The secretary of the Board of Agriculture has nothing whatever to do with the tubercular laws of our state. We have a commission that looks after this disease in animals, but I am not well enough posted to talk against a professional man like Professor Moore. However, I will say that I am interested, as an owner of cattle, in eradication of the disease as it exists to-day.

I am also interested in our laws. I had the honor to be in the Legislature two years ago and while there tried very hard to get a law to eradicate the disease. I think the only way is to have a law making it compulsory to have cattle tested. If the legislators own cattle and they know or suspect they have this disease among their herds, it is pretty hard to get them to vote for such a law. I think, however, that is the way to get rid of this disease. Make it compulsory to have herds tested.

Digitized by Google

If people who live in the cities and villages who are buyers of milk, cream, etc., would only say to the producer, "We will not accept your milk, cream or butter, or indeed anything from your herd unless you give us a certificate from a reliable veterinarian that your herd is free from tuberculosis," this is what would give the state a clean bill of health of our dairy herds. If the creameries where produce is bought would only say to the producers, "You must show us a certificate that your herds are all free from the disease of tuberculosis, before we will buy your produce," that would be a great help towards stamping out this disease.

I fully agree with what Mr. Aitken has said. Ventilation and sunshine is what we need in all of our stables, but we have got to have the germs of tuberculosis there before we can breed them. In a poorly ventilated barn, the disease will breed much faster.

Some one spoke of the difficulty of our milkmen in buying cows free from disease. My advice is buy only the cows that have been tested or subject to the test. Whenever I sell I have to sell under test, so it is no more than fair that we demand a test before we buy. I never had a case of tuberculosis in my herd except what I bought. I bought three cows from an adjoining town and the gentleman told me that the cows had been tested within six months. I do not think they were tested by a reliable veterinarian if they were tested at all. I had one only a short time when she grew poor; I called in a veterinarian and he made a physical examination and said the trouble was in her throat, sort of bronchial, and he did not think it was tuberculosis. She kept running down, and I became suspicious that she was suffering from tuberculosis. I did not want the people to know that I was suspicious of this disease in my herd and as well I did not want them to know if she really did have it. One day when I was alone I took that cow up in my back yard and butchered her. She was one of the worst I ever saw. One lung was entirely gone, and the other only a little bit of it was in a healthy condition. It was rotten. (I kept quiet about this.) She stood by the best cow I owned and I was quite alarmed, you may be sure. In about six months I got my herd tested, for I wanted to know if any of the other cows had caught the disease. Every cow was free from the disease. While we keep our herds in a good healthy condition, stables well ventilated and lighted, if diseased cows are allowed to stand by or associate with healthy cows, the disease is not as liable to spread. The first time I had my herds tested, I had two calves eight months old that responded. It was a question how those calves contracted tuberculosis unless it was this, and I will ask Professor Moore a question. One of the members of my family was sick four years with tuberculosis. She used to be out of doors a great deal when the weather permitted. She went to the barn with me usually when I fed the calves. This is the question: Did those calves get that disease from sputum carelessly dropped about in their reach?

Digitized by Google

Dr. Walter L. Hœvens, Chester Depot.

It seems to me important for the local health officer to know of every recognized case of tuberculosis in his town. I suppose it is the custom of physicians throughout the state of Vermont to send sputum to the Laboratory of Hygiene for examination in most of their cases of suspected tuberculosis. The specimen is sent to the laboratory by the attending physician and the report of the examination is very properly returned to him. If the result of the examination is positive he reports the case to the State Board of Health. The local health officer has no reliable knowledge of the existence of tuberculosis in his community and is absolutely powerless to safeguard the public. My idea is this, that every case of tuberculosis, every case of typhoid fever and every case of diphtheria investigated by the Laboratory should be reported to the local health officer as well as to the attending physician. The report to the attending physician is to establish his diagnosis and to aid him in the treatment of his patient. The report to the health officer is for his official file and to aid him in the preservation of public health. The health officer should know, not through the attending physician but directly from the Laboratory, of every case of communicable disease that has been reported as such by the Laboratory.

In raising the quarantine for diphtheria the local health officer upon whom that duty devolves should have a report direct from the Laboratory of Hygiene authorizing him to do so and his report should be a duplicate of the report sent to the attending physician in the same mail. I trust this suggestion will be considered by the State Board of Health.

Dr. C. Ball, Rutland.

With regard to the reports which come from the Laboratory I would say that I had a little complication arise in my town. We had a case of diphtheria. The attending physician took the cultures and sent them to the State Laboratory and the reports were sent to him. He telephoned to me that two successive cultures were negative and that he wished me to fumigate the house and release the family from quarantine. I did not ask him to see the reports but went ahead and fumigated the house and released the family. I took his word for the meaning of the reports. A few days afterwards he got a letter from Dr. Stone asking him why he did not send in other cultures from his case. The case had been released and had gone to another town. I asked the attending physician regarding it and he looked up his report. It said, "No growth." This he took for a negative culture. However, it also stated on this report that another culture was requested. If these reports could be sent out in duplicate, one to the attending physician and the other to the health officer, a lot of misunderstanding would be avoided. We should be notified, where there is a case of diphtheria in our town, when it is to be released.

Digitized by Google

Dr. W. H. Grinnell, Mount Tabor.

I want to say a word with regard to the value of the thermometer. It is the non-medical people you want to convince. Give your patient a thermometer; ask him to take the temperature in the morning and again at night. With a sub-normal temperature in the morning with a rise in the temperature at night which continues for several weeks, you can not have anything but tuberculosis in this country.

I had a young woman patient who had been told she had no such trouble. I gave her a thermometer and told her to take the morning and evening temperature herself. She was brought over to my side and is now gaining. She was convinced she had tuberculosis and began to take care of herself and to-day is gaining.

Dr. L. P. Sprague, Burlington.

I simply wanted to ask one question. I wanted to ask how those results were obtained; whether by staining or by animal inoculation?

With regard to the score card Professor Beach has spoken of, I would say it is an excellent idea. I think if the State Laboratory had a sufficient number of inspectors that would be one of the first things they would undertake to do. Publicity is one of the best ways to bring about the desired results. At present we have not a sufficient force to go around to these dairies throughout the state and gather the statistics which we would like to, but I will say that the herds here in Burlington are all tuberculin tested at the present time.

Dr. E. R. Clark, Castleton.

Quite a few dairymen in the neighborhood of Castleton say that the tuberculin test has been more of a curse to the state of Vermont than it has done good, for the reason that it has tended to produce tuberculosis rather than show the absence or presence of the disease. I am not fully versed on this subject; the dairymen do not want anything to do with it. I wanted to ask one question and that is, whether there is any possibility of transmission of tuberculosis in cattle through the tuberculin test. I ask this not because there is any doubt in my own mind, but to get an authoritative answer to use when I get home.

H. H. Wheeler, South Burlington.

It seems to me that what has been said was directed toward me. I have kept cows within two or three miles of here all my life, and never had a case of tuberculosis except what I bought into the herd. I found that I had one animal which I purchased from the station. I put in an application for the test and found that this cow purchased from the station had infected her neighbor, one on each side. Now, instead of having one infected cow I had three. We have been testing our cows ever since

Digitized by Google

then and we have failed to find any reason for suspecting they contracted the disease from the tuberculin injected. Some times we suffer quite a little by purchase, but every time I have had my old cows tested, they gave negative results. They have never gone out to be tested and been condemned.

Dr. C. S. Caverly.

There was one picture that showed the percentage of positive results obtained by examining the milk. I was a great deal surprised that so large a percentage showed up. I think it was nine or ten out of fourteen. I wanted to ask if there was any statement to go with this picture as to whether the udders were diseased or whether it was a case of pulmonary or glandular tuberculosis.

Mr. Piper, Panton.

You spoke of keeping diseased cattle for breeding purposes. I would like to ask whether or not there would be a tendency toward the disease in the offspring of these cattle. I would like to know if the offspring showed any signs of tuberculosis and what percentage.

Dr. Henry D. Holton.

I want to call your attention to the fact that although in European countries the meat of animals suffering from bovine tuberculosis is under certain conditions used for food, the law of this state is very strict and says that the flesh of any animal suffering from any disease, which includes tuberculosis, shall not be used as food. You will probably remember the sensation which occurred here two years ago when it was found that some of the carcasses of the animals which had reacted to the tuberculin test had been slaughtered and sold for food in this state and probably in other places. I simply want to call your attention to the law of this state, which is very explicit on this point.

The Doctor spoke upon the proportion of cases that are known, positively, to have been transmitted from the bovine to the human. Von Behring, Ravenel, Checori claim very strongly that the point of infection in the human subject, with tuberculosis, is not through the lung, but in the intestinal canal, through the mesenteric glands.

Dr. Peck spoke about the state making some provision for instructing the people who have been disposed to tuberculosis. In 1902 the Legislature passed an act that every physician should, within one week after the case came under his observation, report that case to the secretary, not for the purpose of publication, but in order that the proper literature (relating to the care they should take of themselves as well as of the sputum) might be sent them to prevent the disease being communicated to those around them. I had nothing whatever to do with that act, but I

Digitized by Google

know the gentleman who prepared it and his idea was this: If the physician reported the case to the health officer of his town, it would more likely leak out that such a one had tuberculosis; if it went to the secretary of the board of health, who would not be a resident of the town, it would not be as apt to. I have been asked time after time if the case of John Jones had been reported to me as tuberculosis. I am like the witness in the Standard Oil case, I haven't any memory. What has been the result of that law? We have had for the last two years something like 460 or 466 deaths from tuberculosis reported. There has never been a year that over 250 cases have been reported to me as suffering from the disease. We know there are from three to five cases to every death that occurs. As fast as one person passes into the grave, three are coming on, so we have in this state from 2000 to 2500 cases all the time; yet less than 300 cases have been reported at any time. I don't want to bring any charges against the profession but I have had patients come to me and say: " I know I haven't any trouble with my lungs, but my folks wanted me to come to you and have you make an examination." I will cite the case of a young woman who came to my office. She had one or two hemorrhages; had lost between twenty-five and thirty pounds in three months; her case was a well-marked case of tuberculosis. I made an examination and found quite a cavity in one of her lungs. After I had examined her, she said to me: "Well, you don't find any trouble with my lungs, do you?" I said, "One of your lungs is a little weak." Tears came to her eyes; she was very angry; she stamped her foot and said, "You needn't try to frighten me." I said, "If you are going to get well (you have got a serious disease in one lung, and you certainly will go down into consumption unless you take more care of yourself), you have got to start in and try to." She said she would certainly return to her school. I said, "I am very glad if I have been mistaken in my diagnosis, but I think you should stay at home and take care of yourself." She went off to her school. In four weeks she came back on a cot from her school. She had a severe hemorrhage. About two weeks before she died she said to her sister, "Well, I guess Dr. Holton was right after all." I think there are a great many patients who if I told them they had tuberculosis would go off to Dr. So and So or would hunt up some physician who would tell them they did not have the disease.

We have been told that out of 139 cases, twenty-four were of bovine origin. So we would have 100 cases as the result of communication with the bovine, here in Vermont. Do we want 100 cases every year added to the number we already have? Can we not induce people to be a little more careful? Dr. Bryant spoke of the cooking of the meat, which will destroy the germs if there are any there. I always ask to have my meat well cooked on the principle that I would rather eat well-cooked bugs than raw ones.

Usually the incipient cases are the ones not reported. I imagine that at

Digitized by Google

the sanatorium they do not find permission asked for a great number of incipient cases; they probably have more permissions asked for those in the second and third stages.

Take the case of a young man who is run down; hacks a little; does not feel quite well enough to do hard work but is able to do little odd jobs here and there. He says he is just run down. He does not go to a doctor until he has been in this condition for five or six months. Then when he does consult a physician, it is found that he has a cavity; his chances of recovery are diminished. If he had gone at once, he probably would get cured. Impress upon your people the necessity of an early diagnosis.

When you have a case of tuberculosis, tell the patient the truth; tell him he has tuberculosis, an incipient case. Tell him he will not die if he will take hold, but the doctor can't do it all for him. He must start right in and help himself.

V. A. Moore, V. S.

I have been interested in the ideas brought out by the different members of your meeting and I only wish to emphasize a few points.

I wish to emphasize what has been said as to the importance of an early diagnosis. However, I wish to say that the Laboratory cannot always help you out in the matter. It is not always that you will find the bacilli in the sputum in early cases of tuberculosis, if it is glandular tuberculosis or tuberculosis of the intestine and there is no discharge into the bronchi. So we have to consider the portals of entry and as well the doors of exit. The importance of an early diagnosis has been brought out. A rise of temperature in patients exposed to tuberculosis should at once cause suspicion. Children of tubercular parents should be watched, and real success is going to be gained only when we are able to get at these early cases which are amenable to treatment and get them before they are spreading the virus to others. With diphtheria and scarlet fever, etc., the disease is over in the course of a week or two, but we do not have this with tuberculosis. The germ gets into the system and works, and the patient does not recognize the disease until the general health is interfered with and then hope is not very great. If people only would go to a physician when they have been exposed so the diagnosis may be made before there is any destruction of tissue, then there is great hope for a final recovery. This is what we must try to make the people understand.

The Government meat inspectors of this country admit the sale of meat from animals which have suffered from localized tuberculosis and require the condemnation of flesh from animals which have suffered from generalized tuberculosis. In New York State we had an inspector. In Vermont you have no inspector. Here are the difficulties. I don't suppose that all of the meat consumed here is raised in this state. So when

Digitized by Google

you admit meat from the packing houses you are admitting a pretty large per cent of meat from animals which had tuberculosis. We had some trouble in our state with this matter but it has finally been satisfactorily adjusted. In Wisconsin and now in New York where cattle are tested with tuberculin and are killed under Federal inspection, the meat value is saved. We do not want to urge the people to take things that are diseased, so we plead for rationalism. When we get a good reaction with tuberculin I believe we have every reason to believe that animal is suffering from active tuberculosis. It may be so slight that it is impossible to isolate it under the microscope, but I firmly believe with a good reaction you have tuberculosis in the creature. Some authorities have said that cows far advanced in pregnancy will give the reaction, but in my experience that has not been the case. I never yet have failed to find a good tubercular lesion in those cases that give the reaction.

The first question raised this afternoon was the matter of the difficulty that the farmer or dairyman had who sold dry cows and brought fresh ones in order to supply the milk. The difficulty they have in buying sound animals was brought out pretty forcibly. In my talk I brought out the fact that the demand in the cities for large quantities of milk has caused farmers to produce milk the year round and the dairymen have gotten into the habit of selling the dry cows and buying the fresh, so we have a stream of animals going about continuously; consequently it makes it very hard to build up and retain sound herds. I think the most vicious thing that our farmers are doing is the killing of the heifer calves. We need a large number of sound cows and some one should go into the business of raising stock for the dairymen, if they have got to sell and buy as I have just stated, so they may have some source from which they can purchase sound animals. That is one of the first and most important things to be considered. If we can stop the spread of the virus of tuberculosis, the disease will soon disappear. If we can have a source of sound animals, I believe one of the difficulties is overcome. Our commissioner is considering the desirability of establishing farms or getting farmers in some way to start raising sound stock for these herds to be replenished with. The second question is that of ventilation. I made the statement that the question of ventilation had very little to do with the spread of the virus. We have found in New York, and I have no doubt it has been found in many other places (I know it has been found in Wisconsin and Pennsylvania), where herds of fine animals, kept under the very best sanitary conditions, where the stables have been ventilated thoroughly and were in as good condition as it is possible to have stables, everything was as clean as could be, the animals were carefully groomed and yet here the disease is introduced and it spreads. I believe in ventilation—for clean milk we need it. But I think its importance in preventing the spread of tuberculosis has been overestimated. We not only have in these fine barns tuberculosis, but in California and Montana I have seen

Digitized by Google

large numbers of cattle condemned where the cattle have never seen a barn at all, but have lived all their lives on the plains. They were infected by introducing breeding animals which were infected. Those animals did not know what a barn was. They had lived in the open always. I believe individual contact and the coming in contact with utensils used by a tubercular patient is one of the prime means by which this disease is disseminated. You know how cattle lick each other's noses. If one of them is giving off tubercle bacilli through the respiratory tract, how easy it is for others to get it. I believe that the question of contact should be considered more than we have been in the habit of doing. I believe clean barns and ventilation are what we need for clean milk. We will find that the number of children that die from unclean milk and filthy milk is larger than those who die from tuberculosis from drinking milk.

The other question raised is whether tuberculin produces tuberculosis. I would say with good tuberculin it is impossible to produce it. It is, of course, possible that improperly prepared tuberculin, if made from virulent bovine tubercle bacilli, may transmit the disease. Tuberculin is the concentrated liquid (beef juice containing glycerine) over which tubercle bacilli are grown. The cultures are heated on two occasions during the process to a temperature much higher than is necessary to kill the germs. So, you will see it is impossible for any tuberculin that is prepared in the customary way to produce tuberculosis.

The fourth question raised was with regard to the tendency to tuberculosis in the offspring of tubercular cattle. I would say we have not had sufficient time to state definitely on this subject. I tested within the last six weeks 202 heifers between the age of eighteen months and three years, nearly all the offspring of tuberculous dams, with only one reaction. The post-mortem showed a very slight tubercular lesion. I have not a knowledge of any animals over four years of age that have been raised from tubercular dams. In the human subject there seems to be a tendency the other way. I have a collection of some four thousand cases of tuberculosis—two thousand in people of tubercular parentage and two thousand in people with no tubercular history, in which the average duration of the disease was longer in those from tubercular parents than in the others. I do not believe there is any tendency to tuberculosis in the offspring of these animals. By educating the people to see that it is for their own interest to get rid of infected animals, we shall come to the time when animals will not be exposed. So long as they are not exposed there is no danger.

Digitized by Google

SANITATION OF PUBLIC BUILDINGS.

WM. PAUL GERHARD, C. E., NEW YORK CITY.

I greatly appreciate the honor conferred upon me by the officers of your State Board of Health in asking me to come again before you to deliver an address on practical sanitation. Some of you will remember that I was here several years ago and addressed you on the subject of "Modern and Advanced Plumbing." I shall take up that subject again in this evening's lecture.

My subject for this afternoon, "Sanitation of Public Buildings," is a very large one, which it is quite impossible for me to cover in all of its phases in the time allotted to the lecture, hence I must be content to give a general and broad outline of the matter.

Public buildings embrace all structures, holding either for a few hours or continuously, a congregation of people, for business, political, civic, educational, religious, entertainment or sanatory purposes.

How are we going to classify our public buildings?

I. One method of classification is according to the purposes or objects of the building. This is the usual division made by architects and builders. We have buildings for commerce, trade and business; for manufacturing; for traffic and transportation; for intercommunication, like the post offices, telephone and telegraphic offices; for educational, teaching and scientific purposes; for worship and ecclesiastical purposes; for amusements; for police and fire protection; for the care of the sick, the injured and the demented; for old people; for the deaf, mute and blind and for orphans; for the administration of justice; for art and exhibition purposes; municipal and Governmental administration buildings; buildings for military purposes; for agricultural purposes; buildings for the engineering works of a city, for water works, sewage and garbage disposal; buildings for bathing and washing purposes; and buildings for the purchase or sale of provisions, and for the preparation of the food (slaughter houses).

II. A second classification can be made by the location of the public buildings with reference to the city plan. This classification is the one usually made by the city architect, the city engineer, or the sociologist interested in city improvement plans. We distinguish: A. Buildings which are business centers and which *centralize* the street traffic. To these belong, for instance, city halls, court houses, parliament houses, capitols, exchanges, post offices, custom houses, telegraph headquarters, railroad stations, ferry houses, hotels, libraries, large department stores and fire and police headquarters.

Then we have: B. Buildings which distribute or *decentralize* street traffic, such as churches, synagogues, chapels, cathedrals, schoolhouses, colleges, universities, theaters, concert and lecture halls, club houses, art museums, public bath houses, markets, small retail stores, sub-police stations, sub-stations of post offices, etc.

Digitized by Google

Finally, we have: C. Buildings which should be confined to *out-lying sections* of a city, such as military barracks and military posts, hospitals, asylums, sanatoria, public institutions, soldiers' homes, jails, prisons, penitentiaries, reformatories, slaughter houses and buildings for the city gas and water works, for sewage treatment, garbage disposal and disinfection, large factories, power stations, large commercial steam laundries, and other industrial buildings.

We can adopt, however, still another classification, namely, one according to the length of time in which the buildings are occupied. This is the division made by the practical sanitarian.

We distinguish, *first,* public buildings occupied by a permanent large population, *both in day time and during the night,* such as the hospitals, orphan asylums, homes for aged people, institutions of all kinds, prisons, jails, military barracks and hotels.

We have, *second,* public buildings *which have large gatherings only during the day time,* such as schoolhouses, court houses, markets and abattoirs, manufacturing buildings and factories, department stores, bank buildings, museums and libraries.

We have, *third,* public buildings *occupied by large congregations for a few hours only,* either in day time or in the evening hours, such as churches and theaters, concert halls, armories, convention halls.

Finally, we have some not readily classified, but important from a health point of view, like the bath houses, bakeries, markets and abattoirs.

We obtain, thus, as you see, three distinct classes of buildings:

(1) Buildings occupied by large congregations day and night, which, from a sanitary point of view, are the most important ones, for in these all health measures must be very strict.

(2) Buildings occupied only during the day time. In these buildings sanitation is also important, but the requirements are perhaps not quite as rigorous as in the case of classification (1).

(3) Buildings such as lecture rooms, theaters and churches where people congregate only for a few hours. Of course ventilation is important in all of these classes of buildings, but the first one seems to require the strictest attention.

It would be out of the question for me to discuss the sanitary features of all the buildings mentioned. I can only select a few representative types, viz. the hospitals, schoolhouses, churches, theaters, bath houses, markets and abattoirs.

The chief sanitary features to be considered are:

1. The location and site, the soil, the surroundings.
2. The group plan of the buildings.
3. The drainage, sewerage and sewage disposal.
4. The water supply both for domestic and fire protection.
5. The plumbing, toilet and bath rooms.

Digitized by Google

6. Lighting, natural and artificial.
7. Warming and ventilation.
8. Safety from fire.
9. Other details.
10. The maintenance of cleanliness, and
11. The removal of waste food and offal.

Some of these features I intend to illustrate at the beginning of this evening's lecture by means of a series of views which I have with me. These views refer to hospitals and their grouping, hospital grounds, schoolhouses, bath houses, and some of these I have been fortunate in securing during a trip to Europe, which I made for purposes of study last year.

The first point upon which I will talk is the

LOCATION AND SITE.

Hospitals.—I do not hesitate to express my firm conviction, strengthened by what I saw last year in Europe, that modern large hospitals should never be located in crowded sections of cities. They should be relegated and built at the periphery of a city. There are numerous advantages to be gained by this location: 1. Plenty of ground. Land is not so expensive and hence one is able to get a larger area and thus do away with five or six-story buildings as built in some of our cities. In general, a hospital situated in the suburbs will have better air, better surroundings and for the patients there will be better rest and quiet, and the same thing applies to the physicians and also to the nurses. Such hospitals can be built upon the pavilion plan, i.e. usually one-story structures. In large cities small hospitals for the reception of the injured will be required, and these may be built on the corridor or closed type of plan. The difficulties of the transportation of the sick to suburban hospitals are not insurmountable.

It is generally assumed that between four and five hundred beds are the desirable limit. In Europe, however, I found recent hospitals for 1000, 1500, and even 2000 beds. With a large area, say from 1000 to 1500 square feet per bed, one has an opportunity to arrange for flower beds, parkways, lawns, terraces, fountains, walks, etc., which make an attractive appearance on the outside of the building.

Schoolhouses.—Schoolhouses should be located on the quiet side streets, away from traffic and noises. The site should be elevated, open, airy and dry. The size of the lot should be sufficiently large to permit the placing of the building back from the street and to provide large playgrounds or school yards. An average size lot should provide thirty square feet per pupil. In procuring a location for a schoolhouse, noisy surroundings and noxious trades, railroad depots and freight terminals, factories, stables, hotels, markets, police stations and fire engine houses should be avoided,

Digitized by Google

as these have a disturbing influence. In large cities, one should also avoid the neighborhood of high buildings, of noisy pavements and filthy neighborhoods; in the country, swamps, stagnant ponds and low places should be avoided.

Theaters.—Theater buildings should be located at central points of traffic. An open lot is desirable as the location of a theater for the sake of safety, but is not often attainable here, where theater buildings are private enterprises. Abroad, where many theaters are subsidized by the Government or the municipality, they are usually located on open squares. This provides plenty of exits in case of fire and gives opportunity for a better architecture.

Churches.—Churches should be located centrally and be convenient of access, if possible at prominent street corners.

In Europe, large churches and cathedrals are always placed on open squares. This is very desirable. The size of the lot should be ample to meet all requirements of the congregation. An open space gives a better architectural appearance to the edifice and secures better air and light.

Markets.—Markets for the wholesale trade must be located near the harbor, the docks, or convenient to the railways and connecting highways in order to be accessible for the handling of the farm products.

Retail markets, on the other hand, should be in the center of populated city districts so as to be accessible for the general public.

Abattoirs.—The abattoirs should be placed on the outskirts of cities, and below the city if this is on a river. They should never be near any residential districts.

The principal points governing the selection are traffic connections, drainage and water supply. A large area is required for the numerous buildings, and there should be sufficient facilities for the transportation of the cattle and of the butchered meat.

SANITARY REQUIREMENTS AND TYPES OF HOSPITALS.

The chief sanitary requirements of hospitals are:

1. Admission of plenty of fresh air and light, and
2. Maintenance of minute cleanliness within and without the buildings.

We may distinguish two types of hospitals: (1) The older or closed type, sometimes called the block or corridor system, where the different wards are located along or connected by corridors. (2) The newer type, or pavilion type, also called barrack type (if applied to temporary structures), which decentralizes the patients and permits a better separation and a better classification of diseases. It consists largely of one-story buildings.

Hospitals are always composed of several buildings and the best way of grouping these buildings requires a great deal of study.

Digitized by Google

ABATTOIRS—GROUPING OF BUILDINGS.

The buildings which compose a slaughter house are sheds, pens and stables for cattle, separate slaughter houses for cattle and calves, sheep and pigs, cold storage buildings, buildings for diseased and suspected animals, administration building, power house, offices for the meat inspectors, buildings for the cleaning of entrails and for the commercial utilization of offal.

DRAINAGE.

Drainage as distinguished from sewerage means the removal of the surplus moisture from the soil and the removal of surface water. Sewerage means the removal of the water which has been introduced into the buildings and which must be taken care of after use.

Hospitals.—For hospital buildings artificial drainage is essential where the ground is damp, wet or springy. To accomplish it, the use of open-jointed, small-sized agricultural drain tiles is recommended, and these should never connect with the sewer of the building. They can be discharged into open ditches or into the nearest water course. Sewers for foul water should never be used for drains, and vice versa.

Theaters.—In these the under-stage is often so deep that it comes below the level of the street sewer and in order to keep the sub-basement dry, the subsoil water must be removed by some method of pumping, either automatically or otherwise.

Churches.—Where the basements of churches are used for Sunday-school rooms or trustees' meetings, sociables, etc., some attention should be paid to the drainage of the basement. One should always avoid, dark, musty places which are necessarily unhealthy even for temporary occupancy.

Schools.—In the case of school buildings, very much the same requirements apply as given for churches. The playrooms are often placed in the basement of the schoolhouse and it is inadvisable to put children into basements which are damp and otherwise unhealthy.

Markets and Abattoirs.—If the soil and the site are not naturally dry, drainage should be provided so that there will be no stagnant pools of surface water anywhere.

SEWERAGE AND SEWAGE DISPOSAL.

Hospitals.—The city hospitals can in nearly all cases be connected to a city sewer. There should be, however, some provision for the disinfection of liquid wastes from infectious diseases. In Europe I found in some cases that the entire sewage from a hospital was subjected to disinfection before it was discharged into the city sewer, in other cases only the wastes from pavilions for infectious diseases were so treated.

In the case of hospitals located beyond the city limits, we cannot usually make connections with a city sewer as this would involve the carrying of

Digitized by Google

a long line of sewer; therefore such hospitals must devise their own independent sewerage plant. In planning for it, the topography of the ground will decide whether the sewage has to be pumped or disposed of by gravity. The separate system of sewerage which excludes the rainfall, is the one generally to be used. This involves the laying of small pipe sewers; it has other advantages, for instance, where the sewage has to be pumped, the volume to be dealt with is less; where the sewage has to be chemically treated, the volume remains more constant and is not so large. With six or eight-inch pipe sewers we can dispose of the sewage from the largest buildings in a satisfactory manner. The alignment should be as straight as possible and the grade sufficient to prevent deposits. Manholes and flushing appliances should be provided.

It is rarely the case that the sewage from hospitals can be delivered in its crude state into a stream. In some states the laws very properly prohibit such a discharge. We must therefore purify the sewage to a greater or lesser extent before it can be so discharged. All ordinary systems of merely straining or subsidence in tanks will not answer in the long run; they are imperfect and do not purify. Years ago the chemical treatment of sewage was advised, but it was found to be expensive in the cost of the chemicals used, in the manipulation and management, and did not always give the best results. One of the best systems used to-day is the one advocated twenty-five or thirty years ago, viz. land treatment of sewage, either by irrigation or by intermittent sewage filtration. Where the sewage is not too large in quantity, the sub-surface irrigation system gives good results. There must be a sufficient disposal area for the suitable purification of the sewage. Within the last few years several new systems, called the biological treatment of sewage, have come up which are interesting and promise good results. They comprise purification by septic tank treatment; sewage treatment in contact beds, and in percolating filters.

The septic tank is practically a scientifically constructed cesspool which is usually covered over to exclude the light and air. In such septic tanks the sewage is acted upon by the anaerobic bacteria which thrive in darkness, away from air, and the action is such that portions of the sewage are liquified, but the resulting effluent is rarely so purified that it could be delivered into a watercourse. Further purification is therefore required. This can be accomplished by the other biological methods. Sewage contact filter beds are large beds filled with broken stone, from three to five feet deep. The sewage is delivered into such tanks and allowed to stand for several hours, and during this time some purification takes place. When the time has elapsed, the sewage is discharged and it is then in such a condition that it can be emptied into a water course. The other treatment is that by means of trickling or percolating filters, which are filters of coke or broken stone from seven to ten feet deep, well aerated and well drained; on to these sewage is discharged intermittently. The degree of purification is not as high as in the case of contact beds.

Digitized by Google

All systems of sewage purification require careful management and constant attention, and it is well to constantly bear in mind that no sewage disposal system can take care of itself in the long run. Hence it is my practice to advise the use of a minimum amount of automatic appliances.

Schools.—City schoolhouses are usually connected with the city sewers, but country schools require some kind of disposal system. The ordinary cesspools and dry vaults are objectionable and should be done away with. For country schools there are only two methods, viz. (a) earth closets for small schools, (b) water carriage system.

Abattoirs.—In this country the cases are rare where the waste water is purified, but in Europe we find many municipal abattoirs and in these there is nearly always some system, generally a chemical system, for the purification of the waste water.

WATER SUPPLY.

Water supply is very closely allied to the sewerage, in fact, one cannot be successful without the other.

Hospitals.—City hospitals require large water mains because more water is used in hospitals than in other buildings, also for the sake of the desirable fire protection. Where hospitals are located beyond the city limits, it is necessary to provide an independent water supply. The chief considerations are:

First, the determination of the quantity to be provided. We must provide very generously, for some hospitals use 150 gallons per capita per diem and where this water has to be pumped, it means a large expense. One should, however, always endeavor to check the waste and to restrict the consumption.

We may obtain the water from springs or from wells and these may be shallow or deep wells (shallow wells should not be used unless absolutely necessary). Other sources are surface water from watersheds, lakes, rivers, and brooks. The next point of importance is the quality, which should always be ascertained by chemical and bacteriological examinations before deciding upon a source of supply.

We should have an abundance of water pressure for fire protection purposes. We obtain the pressure, except in the case of the gravity supply when the source is at a high elevation, by pumping water into elevated tanks, standpipes, or into pressure tanks. In providing a pumping system, one should always arrange it in duplicate to provide against the breakdown of the machinery.

In hospitals, schoolhouses, and also in other public buildings, the question of drinking water is of importance. While we may purify the water generally by mechanical filters, it is always wise to have a special apparatus such as the Chamberlin-Pasteur or the Berkefeld filter for the drinking water. They filter slowly but they give a water which is germ-free for from three to seven days. After this period they should be thoroughly

Digitized by Google

cleaned out. All filters, however, should be washed and sterilized from time to time to accomplish good results.

Theaters.—In theaters we require water for (1) ordinary domestic use; (2) for drinking purposes for the audience; and (3) for fire protection which in theaters involves an elaborate system.

Churches.—Church buildings, too, require a water supply; especially the Baptist churches, which require water for the immersion pools used for baptizing. In others it is necessary to have water to operate the organ.

Schools.—With regard to the drinking water supply for schools, I would point out that anything in the shape of buckets, with cups or other devices, is unsanitary. The new "hygienic fountains" at which the children can drink the water without even touching the fountain, form an almost ideal arrangement.

Abattoirs.—Abattoirs require enormous quantities of water and, being located on the outskirts of a city, must usually provide an independent supply. They are largely one-story structures and do not require much pressure. It is necessary, in the case of slaughter houses, to provide hot water for washing the sinks and floors, and this is readily provided, as there is almost always a boiler house, in which steam is available.

PLUMBING.

Hospitals.—Hospitals require a great deal of the usual plumbing, but also some special plumbing fixtures. The plumbing should be as simple, direct, compact and plain as possible, and nickel plated plumbing should be avoided.

The plumbing in the pavilion or ward buildings should be cut off from the wards. All parts of the plumbing should be exposed to view. No vent pipes should be allowed to pass through the wards. If there is any building in which ornamental plumbing is out of place, it is a hospital.

Theaters and Churches.—Theaters and churches have a larger amount of plumbing than most people would expect, and in both kinds of buildings some very unsanitary conditions have been discovered.

Schools.—Toilet rooms for schools may be placed in the basement or else outside in special outbuildings. Both types can be properly arranged My preference, however, is for basement toilet rooms in schools, provided these rooms are properly ventilated; and that is so that there will always be a draft of air from the halls to the toilet room and then out through the flue, and provided furthermore that single or individual closet bowls are used, and not the automatic flushing water-closet ranges, which, I hold, should be used only in outside toilet pavilions, but never in the basement of a schoolhouse. I advocate the placing of the plumbing in the basement for the reason that it is easier to take care of and that it is protected from freezing. In large schoolhouses, there may be a few toilet rooms on the upper floors for the teachers, but I find it is much more desirable to put these also in the basement so there can be a supervision of these rooms by

Digitized by Google

the teachers, for in many cases the janitor's supervision is not sufficient. In the large schoolhouses it may be necessary to provide toilet rooms on every floor. They should be planned in a wing of the building. Dry closets, on the Smead system, should, in my opinion, never be permitted in a schoolhouse.

As to the care of the plumbing work, this devolves upon the janitor, but also on the principal of the school and on the health officer of a school district.

Markets and Abattoirs.—Markets and abattoirs should have plain and extra strong plumbing. They require numerous sinks, urinals, water closets and a few shower or spray baths.

TOILET AND BATH ROOMS.

Hospitals.—In hospitals the toilet and bath rooms must be located convenient to the wards. I recommend that the toilet rooms should not contain the lavatories. These should be placed in separate rooms. The toilet rooms require abundant ventilation and should have floors and walls finished in non-absorbent materials. As to the fixtures, avoid all sharp corners and use plain white earthen ware. For insane hospitals, the plumbing should be extra or double strong; the toilet rooms should have no partitions and no doors for the individual seats. The flushing should be accomplished automatically, or else combination pull and automatic tanks shall be used.

As to the bathing appliances, there should be one fixed tub and one tub on wheels: the former should be located in the center of the room so the attendant can get all around the patient easily. In the insane hospitals, the bathing was formerly accomplished by tubs, but owing to the many abuses it was found preferable to dispense with the tub. In New York State it was found advisable to abolish the tub altogether, and to use only the spray bath. There is another class of bathing appliances, called "permanent water baths," in which the patient is placed in a frame and allowed to remain in the tub for weeks or even months. Very few of these have been installed in this country, but I have seen a great number on the other side. The hospitals of Europe generally make provision for large central bath houses, in which medical baths of all kinds are administered and where the massage treatment is given, usually in connection with a mechano-therapeutic installation.

Bath Houses.—A class of public buildings, in which plumbing and bathrooms form the most important feature of interior equipment and construction, are the bath houses. The large public bath houses of European cities contain all kinds of baths, including steam and hot air baths, electric light baths, and some have even baths for dogs. The sanitarian who watches over the health of a city is more especially interested in the so-called people's bath houses, in which the admission fee charged is very low or which are altogether free. For such bath houses the rain or spray baths are eminently well adapted and they are used in the majority of

Digitized by Google

cases, though a few tub baths are also provided for women, babies and invalids. The State of New York passed a law some years ago, making the building of a sufficient number of such bath houses in the crowded districts of cities mandatory upon all cities having a population of 50,000 inhabitants or over. Quite recently a movement for the revival of swimming pools has sprung up, and a combination of spray baths with swimming basins is important and desirable for cities located on rivers, as for instance New York City, where the floating open-air baths are becoming impracticable owing to the pollution of the rivers with sewage and manufacturing wastes. The combination baths are also desirable for those inland cities which lack swimming facilities altogether.

The details of the placing and fitting up of these baths will be illustrated by a number of lantern slides which I had prepared from actual examples.

LIGHTING, NATURAL AND ARTIFICIAL.

Hospitals.—In hospital wards plenty of windows are provided, but these are put in as much or more for the airing of the ward as for lighting purposes. In the wards a subdued light is preferable and is obtained by the use of shades or blinds. Of the available artificial lights, electric lighting is by far the best. In the wards only dim lighting is necessary, but in other parts of the hospital, and particularly so in the operating rooms, a very strong light is required.

Theaters.—The lighting problem of the theater, and particularly of the stage, is a very complex problem. All new theaters have electric lighting, and this was considered to be much safer from the point of view of fire, but recent statistics of theater fires make it seem at least questionable whether electric lighting is really safer. One thing electricity certainly accomplishes, i.e. it helps to provide a proper ventilation of the theater auditorium.

Schools.—The day lighting of schoolrooms is a very important question, and in the inspection of school buildings we find a great many schoolrooms which have the light falling in from the wrong side. Which is the proper position for the windows in a classroom? If the windows are put in the back of the room, making the light fall over the pupils' shoulders from the rear, then the teacher faces the light. If the windows are put in front, it is very bad for the children's eyes. There is really but one correct position, and that is the light should come from the left side of the pupil. The windows should reach high up, nearly to the ceiling.

I want to call your attention to the importance of having in a school all stairs and halls perfectly lighted, so that they can be used safely. There should be daylight illumination, and also provision for artificial lighting on dark days, by either gas or electric light.

For dark afternoons the classrooms require either gas lighting or incandescent electric lighting. For classes in drawing the indirect reflected

Digitized by Google

light is considered to be the best. Where gas is used, preference should be given to the Welsbach incandescent and inverted mantle burners.

Markets.—The market halls must be lighted not only at night but in the early morning hours in winter, and the electric arc light, in its various improved forms, is the one best adapted for the purpose.

Abattoirs.—The slaughter houses are often located out of reach of the gas or the electric light works and hence require to be fitted up with an independent lighting plant, which may be either an acetylene lighting plant, a gasoline, or air gas plant, or with dynamos and electric wiring.

WARMING AND VENTILATION.

This is a topic of the very greatest importance, to which I cannot possibly do justice within the limits of my paper and which in itself is so large that it could hardly be dealt with properly in a separate lecture. I shall, therefore, restrict myself to the mention of a few points on ventilation.

Hospitals.—The ventilation of hospital wards is accomplished in the best actual examples from American practice by mechanical means, such as fans and blowers, run by steam engines or by electric motors. It is frequently the case where such ventilating machinery was originally installed, the fans are not used, for reasons of economy, after the building has been occupied for some years. It seems rather absurd to put in such expensive installations, which practically accomplish no good, because not kept running. I am inclined, therefore, to give preference to natural over mechanical ventilation, although I am aware of the fact that to keep the air in the wards pure and up to standard, very large volumes of fresh air have to be provided. It is usual to provide an air supply of 2700 to 3500 cubic feet per hour per bed. The least that can be done is to provide for the wards a change of air three times an hour.

Theaters.—In these buildings mechanical ventilation is more feasible, because it is required only for a few hours each day, hence nearly all modern theaters have such installation. In addition to any ventilating system it is desirable to practice "air flushing" between the afternoon and evening performances.

Churches.—Defective ventilation in churches is often the cause of the drowsiness of the audiences. Ventilation of these buildings is particularly important where two or three services are held on the same day. It is one of the often neglected duties of the sexton to see that the church building is properly ventilated.

Schools.—For schoolhouses a system of mechanical ventilation is, as a rule, too costly. It is certainly out of the question for the majority of schools of the smaller towns, which have but one or two classrooms. Good natural ventilation can, however, always be secured by means of properly built and properly dimensioned exhaust flues.

In school ventilation, two points are essential, viz.:

Digitized by Google

1. Provide abundant air flushing during recess.

2. Remove carefully all sources of air pollution. This means (a) that wardrobes for pupils should never be placed in the classrooms; (b) that school baths should be provided to keep the children clean, and to teach them cleanliness of the body; (c) that a scrupulous cleanliness be maintained everywhere in the building.

Bath Houses.—In these buildings ventilation is quite necessary to remove the vapors arising from hot water in filling the tubs or running the sprays. Efficient ventilation is very necessary in Turkish bathrooms, but is very costly. In the swimming baths of German cities I found water sprays provided in the four corners of the clerestory over the swimming bath, intended to cool the air.

Markets.—In market halls ventilation is important on account of the odors attaching to some of the provisions for sale; it is likewise necessary to keep the food from spoiling.

Abattoirs.—The room or building in an abattoir where, according to my observations, ventilation is most essential, is the one where the entrails of slaughtered animals are cleaned and boiled.

SAFETY FROM FIRE.

We should not overlook the question of safety from fire in our public buildings. Of the safety of the buildings I shall not say anything, because this interests us only indirectly and is a matter well taken care of by the underwriters. What interests the sanitarian is the safety of the inmates.

All public buildings, where a large number of people are congregated or assembled, whether for a few hours only, or for the entire day, or which are occupied both night and day, are more than ordinarily susceptible to calamities due to fire or panic, and should for this reason receive particular attention by the authorities in charge—the building department, the fire, the local health and State Board of Health departments. The inspection should be made, not only during construction, but after completion as well.

In some of the buildings under discussion it seems desirable to introduce apparatus or appliances for the automatic extinguishment of fire. This is already being done in theaters, and also in extra-hazardous parts of hospitals, and after a recent school fire calamity, which all of us still remember, it has been proposed for schoolhouses. According to recent statistics 93 per cent of fires starting in buildings equipped with sprinklers are extinguished, or at least held in check by them.

In dealing with this problem, we should bear in mind the dangers due to an actual outbreak of fire, as well as those due to panic caused by a false alarm of fire, or otherwise.

Regarding the danger of a panic in places of assembly and schools, the question of planning is of more immediate importance than fireproof construction. A good, symmetrical plan, with wide corridors and ample and

Digitized by Google

numerous stairways is desirable, stairs should be fire and smoke proof and well lighted, doors should always open outward, and should never be locked in schools, churches or theaters during a session, service, or performance.

Omitting the consideration of the fire-extinguishing equipment, I wish to point out that the maintenance of cleanliness and careful, periodical inspections, assist very materially in preventing outbreaks of fire.

The inspection of the heating apparatus, of the smoke flues, and of the lighting arrangements, is of particular importance.

In the case of hospitals we are dealing with a congregation of helpless patients, many of whom are bed-stricken. The annual fire record regarding theaters and churches destroyed by fire is appalling. In some large cities the building rules are very strict now and here we find recently built theaters to be much safer. A frequent inspection of churches is equally desirable. Many modern school buildings are still erected without due regard to safety. The record for the six months from January to June, 1908, shows the occurrence of fifty-eight fires in schoolhouses of the United States and Canada. Schoolhouses should be built of fire-resisting or slow-burning construction. The danger points should be equipped with automatic sprinklers, chiefly the basements, the boiler or furnace room, the closets under stairs, store rooms, clothes rooms, lockers, corridors and laboratories.

A schoolhouse should be capable of being emptied in from three to four minutes, and the necessary stairways and exits to accomplish this should always be provided. After the recent fire at the Lakewood school at Collinwood, Ohio, several architectural papers suggested the use of emergency exits. Personally, I do *not* approve of such exits; I claim *all* exits should be used by teachers and children daily, and at the fire drills, to make them acquainted with the means of escape.

Ceilings over boilers should be fireproofed. No storage of inflammable material in the cellar, and no wooden enclosures near the heating apparatus should be tolerated.

If such precautions as I have broadly outlined were more generally observed, we would have fewer horrors like the one at Collinwood, Ohio, of March 4, 1908, where 173 children and two teachers perished out of a total of 310, and where *within one hour* from the time the fire was discovered the entire school building was in ruins.

REMOVAL OF WASTE FOOD AND GARBAGE.

Hospitals.—Hospital buildings should always have a garbage furnace or crematory, not only for the destruction by fire of ordinary refuse and offal from the kitchen, but also for the burning of infected bandages and dressings. This should generally be erected at or near the boiler house, but sometimes we find it placed in connection with the sewage disinfecting station.

Digitized by Google

Schools.—In schoolhouses of country districts a lunch room is often provided for those children who live far from the schools and who remain there during the noon recess. The janitor should take scrupulous care of the food remains and have them stored in covered tight receptacles pending removal.

Markets.—In markets decomposing animal and vegetable food should not be permitted to accumulate, but must be removed daily. The maintenance of cleanliness is very important and embraces daily sweeping, flushing and occasional disinfection. Waste bits of food, butchers' offal, fruit peelings, etc., should be removed in covered carts, and the removal of any food materials condemned by the health officer should be prompt and regular.

Abattoirs.—The maintenance of absolute cleanliness and sanitation in these buildings is furthered by the prompt removal of all waste accumulations, which might attract flies and rats. The fight against these pests must be kept up at all hazards. A prompt disposal of the manure from the cattle yards, stables and slaughtering halls is also necessary.

MAINTENANCE OF CLEANLINESS.

Hospitals.—In hospital buildings, constant vigilance is required to exclude all manner of dirt. A proper sanitary construction of the walls, floors, ceilings, windows and doors will assist in maintaining the wards, the bath and toilet rooms, the pantry, kitchen and laundry, clean and wholesome.

Thorough cleanliness is most essential in hospitals for three reasons:

1. To prevent air contamination.
2. To preserve personal cleanliness and thus prevent contagion.
3. To maintain purity of the water and food supply.

Theaters.—In theaters and halls of amusement the floors, stairs, aisles, chairs and carpets must be kept clean by daily sweeping and dusting. Both should be done in a sanitary manner; the new mechanical systems for the removal of dust and dirt are worthy of investigation. Much can be done to maintain cleanliness by the avoidance of heavy hangings and decorations, and of the plush seats which catch and retain the dust.

Churches.—In churches, the carpets and pew cushions are harbingers of dust. The floors require sweeping and scrubbing, and once in a while they should be washed with disinfecting solutions. The Sunday-school room requires the greatest attention. The matter of cleanliness is particularly important in those churches where more than one service is held in a day, and where all classes of people congregate.

Schools.—The school janitor, as the custodian of the building, is intrusted with the important task of keeping the building clean. This involves the care of the classrooms, of the wardrobes, of the corridors, stairs and entrances, and of the toilet rooms. Metallic door mats or shoe scrapers

Digitized by Google

should be provided at the entrance door. The cleaning of the windows should be done frequently and thoroughly.

The principal of the school should control the janitor's work, and it should not be overlooked that in large school buildings the work is so onerous as to require some assistance for the janitor.

This person should follow a regular routine in the daily cleaning after school closes. Sweeping should be done with wet sawdust, and the dusting of the school furniture with damp cloths. Hygienic methods of cleaning are not always followed by the janitors, nor are they pointed out or encouraged by the boards of education.

The periodical cleaning should be thorough and include the walls, the windows, ceilings, etc.

Periodical sanitary inspections of schools are desirable to guard against the building becoming unsanitary.

Besides this there should be kept up a medical inspection service as a constant precaution against the spread of communicable diseases brought to the schools by the pupils.

MARKETS AND ABATTOIRS.

Proper drainage facilities, a sufficiently ample water supply, and an efficient removal of all offal and refuse assist in maintaining general cleanliness in these buildings. There should be a thorough daily flushing of walls and floors after the slaughtering, to remove the blood, the waste bits of hair and other dirt.

The slaughtering equipment should be kept scrupulously clean, so that the work of killing the animals and preparing the meat and meat food products may be performed in a sanitary manner.

The tables, trucks, racks, utensils and butchers' tools should be cleaned daily and also sterilized from time to time.

The working clothes of the employees and the persons themselves should always be neat and clean.

The sanitary inspection service of the abattoirs should embrace three divisions, namely, first, the examination of the live stock, by veterinary surgeons; second, the inspection of the meat from slaughtered animals, performed by the Government and municipal inspectors, and which should include a microscopical inspection in the laboratory; third, the sanitary inspection of the buildings and their surroundings, by well-qualified sanitary inspectors. This inspection service is among the most important duties of the administration of abattoirs.

The proper management of central abattoirs requires a strict enforcement of carefully drawn up rules and regulations. The State Board of Health should formulate and adopt these rules, but should also have ample power to enforce them. The new rules adopted by the United States Department of Agriculture are a step in the right direction, but they might with advantage be enlarged and improved.

Digitized by Google

DISCUSSION.

S. W. Butterfield, Weathersfield.

You can't expect from me anything perhaps in addition to what has been said by the gentleman from New York City this afternoon with regard to the sanitation of public buildings in a city or a large village. He has given you this part of the question of sanitation very nicely and thoroughly and we greatly enjoyed it. What is left for me to discuss is what I have greater knowledge of, the sanitation of the public buildings in rural communities in the State of Vermont, and I shall speak particularly of my own town, using that and its conditions as an illustration of what perhaps is met with in a great many portions of the State of Vermont.

You know when the early settlers came up here from Massachusetts and Connecticut and settled among our green hills and valleys, the first thought which entered their minds was a home. Following hard upon this, was the building of the church, and at once following that was the building of the school; so we have the home, the church and the school. And it is the home, the church and the school that have made Vermont what it is to-day; have made it a state which we are all proud of, and from its midst have gone out men and women who have made the greater Vermont. In my town we have never gone any farther than just that—in regard to public buildings—the home, the church and the schoolhouse. You may remember the composition on the cow, written by a small boy, which ran along like this—"The cow has four legs, one at each corner." That represents the condition of the churches in my town. We have four churches situated at the four corners of our town. Their sanitation is good and sufficient; and I think if at any time we should have a fire there, there would be no trouble in emptying them so that no one would get injured. In regard to schoolhouses, I am very much interested in this subject. In my boyhood days there were twelve occupied schoolhouses in my town. When the town system came in, they were reduced to nine and now we have only seven. I think if they will continue this and eliminate more of those schoolhouses and put the money into transportation, it will be a benefit all round. I have about decided to recommend at the next March meeting that they build at the height of the land, a schoolhouse which will accommodate the whole town and have them all go up there to school; we would have a school then that would be an honor to us and where we could have perfect sanitation. In my town, we have two little schoolhouses that are a disgrace to the community. They are poor in every respect. This year the school in each has been discontinued and the scholars transported to other places. In regard to the location of the school buildings I would say in early times they must have tried to please every one as far as the location goes. It looks to me sometimes as though they had drawn a line from the homes of the men who lived farthest away and nearest the four cor-

Digitized by Google

ners of the town and where this line crossed, there the school building was located, so they would have equal distances to travel. One is located in a sand bank. There is not a tree on the premises; in fact, nothing for shade within a long distance of the school. Another school building they placed in a cemetery. That might have been a good idea for the location of a school if that school was particularly loaded down with boys full of sport who needed something solemn to correct them. In a town adjoining mine, they wanted to consolidate two districts. They took one schoolhouse and moved it so as to accommodate both. It was placed by the mountain side, and on this mountain are more rattlesnakes than in any other locality in Eastern Vermont. Every few days a pupil would come in and say, "Teacher, I have just seen a rattlesnake." I do not know that any of the pupils were bitten, but that certainly was not what we would consider a good sanitary location. Now as to the internal arrangement of the schoolhouse. First, we have the lighting. In almost every schoolhouse in my town the rooms are lighted by windows on each side of the room. The strong light coming in upon one side, striking one eye, must be deleterious to the eyesight of the pupils. The boys have always been seated on one side of the room, while the girls have always occupied the other. If I had charge of these schools I should have them alternate, the girls having this side for one term and the boys for the next. If I remember correctly when the eyes of the pupils were tested a year ago last fall it was found that thirty-three per cent of the pupils' eyes were defective. I lay it in part to the lighting of the school. In regard to the heating of the schoolhouses. There has been no change in the heating apparatus for the last fifty years. They are still heated with the box stove, which cooks the pupils nearest the stove while the others in the farthest parts of the room may be freezing. The ventilation we have in our schools is closely allied to the heating. The only ventilation we have is through the opening of the windows and doors. Now the children come in after a run at play, heated, sit down in the schoolroom and they want air, and the window or door is thrown open. I think much of the sickness should be attributed to this. If you have these stoves you should have them jacketed. It has been said here before that we should have running water. Only one school in my town has running water. I have been notified within the last few days that it is unfit for use, so I shall have to send a specimen here to the Laboratory for analysis as soon as I return to my home. Some schools have to depend upon the neighboring families for their water supply. The water is carried to the schoolhouse in an old tin pail and the pupils are provided with a little rusted tin dipper from which to drink. Here is the great chance for the dissemination of contagious diseases. One other thing, and perhaps of the greatest importance, is the outbuildings of the schoolhouses of the town. In my town there is not one that is in a sanitary condition in the way recommended by the State Board of Health. This past summer they built

Digitized by Google

one in a certain district ten rods from the schoolroom door, while another in the same building is less than ten feet away. This can not be otherwise than bad. When I have been inspecting the buildings near the close of the winter term of school, I have had my attention called to the matter and I have called the attention of the school directors to it, asking them if they would not do something to correct this state of affairs. One closet is about three and one half feet square inside and just high enough for me to stand up in. It is open to the snow and sleet. I have often had good promises of better outhouses, but they have never been fulfilled. They are in that condition to-day. On the outbuildings of the schools, the fences and every possible place in every district in my town you will find obscene writings and carvings and pictures. I have spoken of these things here before, and I hope that as health officers you will try to see if it is not possible to have these things bettered. You cannot realize the influence it has upon the little children who come to these schools for instruction. The ideas they get from these things are deleterious to the morals of the scholar. We should have our schoolhouses, outbuildings, fences, etc., in such a condition as to insure clean, upright young men and women. For the thoughts and ideas they get here will go with them all the days of their lives. For

"You never can tell what your thoughts will do
In bringing you hate or love,
For thoughts are things, and their airy wings
Are swifter than carrier dove,
They follow the law of the universe,
Each thing must create its kind,
And they speed o'er the track to bring you back
Whatever went out from your mind."

C. B. Kent, Dorset.

I am too tired to-night to have much to say, but I feel it an honor to be associated with such distinguished men as Mr. Gerhard. The paper was very ably given and the discussions have filled the remainder of the subject. However, it makes me think of a story of a missionary who stayed in the heathen land where it was the custom for the wife to prepare the dinner and place it on the table. The husband sat down and ate what he wanted; if he ate it all, it was all right; if he left anything, he would say to his wife, "That is for you." I feel as though the plate was left for me to-night.

As I look back and think of the sanitation when I was a school teacher and compare it with to-day, it seems wonderful to note the advancement. I do not think forty years ago we thought so much about these things. I remember in one school in which I taught I had a family of perhaps four or five children; they were white children, but dirty, ragged and foul smelling. Their hair was filled with things which we do not like to find

Digitized by Google

there. When those children would come into my schoolroom there would be a stench. I stood it as long as I possibly could. I even went so far as to burn spruce gum on the stove to try to kill the smell. However, I could stand it no longer, so one day when they had all assembled, I called the oldest child to my desk and said to her: "You must do something with those children; you must see that they are cleaned up and kept clean. We cannot stand this dirt." After a while she asked permission to be excused. She went out. In about ten minutes she returned and said to me, "Bill Jones wants his young ones to go home." They went and they never returned. Public sentiment was against me at that time. Our laws are such to-day that we could send them home to be cleaned up and nothing whatever would be thought about the matter. We are indebted largely for the change, not only to this Board of Health, but to the men who have gone back of them. The question has been agitated and agitated regarding the sanitary arrangements in all of our public buildings until now we have arrived at quite a stage of perfection. Perhaps if we live twenty-five years longer, we may look back and think how imperfect these arrangements are to-day. But I do not think so. We are indebted largely to this Board of Health because they have urged the matter on. I am glad to be a health officer so as to get a chance to learn regarding our public health laws. I heard a son of a prominent clergyman in New York once make this assertion: "We get along all right in our own way, but the first thing we know God comes along and hits us a rap, and then we begin to take notice."

We got the rap on the head when one morning last fall we were awakened by the cry of fire, and we were compelled to see our beautiful little church that had stood for seventy-five years go down in ruins. Our ladies had just expended $3000 beautifying it and while we mourned the loss of our church, it set us to thinking about our other public buildings. We held church service in our town hall the following Sunday, and we wondered what would happen if fire occurred there during service, and made the discovery that we would have been baked like rats in a cage. A meeting of our board was held soon after and now not only the town hall but the schoolrooms under it are made safe and sanitary. Here a little later one of our best schoolhouses burned, and we thought again, and now a new church is in process of building, and a new schoolhouse with the most approved arrangements, both safe and sanitary. Our other schoolhouses have been made safe and our closets are kept in good condition, and not only our local board but our school commissioners unite with each other to make public buildings right. I feel that not only this State Board of Health but the long list of health agitators who have lived during the last forty years have been responsible for the establishment of a perfect system of health for ourselves and those to follow, and are what Phillips, Sumner, and that long line of slavery agitators were to the abolishment of slavery.

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

Volume IX. No. 2.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

THE INTERNATIONAL CONGRESS ON TUBERCULOSIS.

This was the most wonderful gathering of scientists that ever assembled in the world, men and women who to their other attainments had added acquirements by special study of tuberculosis as it shows itself in nearly every country.

Naturally, everyone was anxious to see and hear Dr. Koch. His address, delivered in good English, was listened to with marked attention, as, in fact, were the statements of every speaker.

Dr. Koch has modified to some extent the views he expressed at the Congress in 1902. He now says:

"1. The tubercle bacilli of bovine tuberculosis are different from those of human tuberculosis.

"2. Human beings may be infected by bovine tubercle bacilli, but serious diseases from this cause occur very rarely.

"3. Preventive measures against tuberculosis should, therefore, be directed primarily against the propagation of human tubercle bacilli."

He holds that bovine bacilli do not produce pulmonary tuberculosis, but may affect the glands in the neck and the mesenteric glands. Dr. Smith of Harvard College stated that tuberculosis of cervical and abdominal glands was due to bovine bacilli. Dr. Raw of Liverpool, England, is convinced from five thousand cases that tuberculosis of the glands, joints and other portions of the body, except the lungs, is due to bovine bacilli. Dr. Ravenel of Wisconsin, who has a reputation as a scientist and careful

Digitized by Google

observer of large experience, presented the question from the American point of view, as follows:

"On the correct solution of this question depends, no doubt, the health of many children, and even their lives, and I would consider it an extreme misfortune not only for this country, but for every country on the face of the earth, if any impression should go from this meeting that even the small proportion of deaths due to the bovine bacillus was a negligible quantity.

"I have inoculated repeatedly the bacilli of the bovine type, absolutely characteristic in every respect, to the human, and if not recovered in culture, if examined in the tissue you will find them beaded and stained exactly like the human bacilli. I have also demonstrated that cows cough up sputum and distribute it exactly as human beings do, and in the sputum of such cows I have demonstrated the tubercle bacilli exactly corresponding to the human body.

"One other thing has been proved through the work all over the world, namely, that the tubercle bacilli can pass through the intestinal wall and move through the mucous membrane of different parts of the body very rapidly without leaving any mark of its passage. Demonstrations have shown that inside of four hours, in fact, inside of three and a half hours, tubercle bacilli have passed from the milk of animals through the thoracic duct and have reached the lungs in sufficient quantities to kill other animals inoculated.

"Having demonstrated that there are a certain number of cases due to bovine tubercular bacillus; that a certain number of deaths occur from this bacillus, and having demonstrated that the tubercular bacillus passes into the stomach or gets there from some outside source, it behooves us from every point of view to take every precaution possible against contamination of our milk. I do not think it is possible with our present knowledge, and it will be many years before we have sufficient knowledge, to determine the number of cases due to bovine bacillus as compared to those due to the human bacillus. There can be no doubt, I think, that at the present time the human phthisis is the phthisis that we must look at for the first victims.

"I cannot agree that the proportion of cases due to bovine baccillus is insignificant. It is an extremely important factor. I may call attention to the fact that to stamp out this disease both sides must be looked after. There is no use of keeping cats out if you are going to let the kittens get in. The kittens will grow to be cats, and, therefore, it is important to guard against tuberculosis in cattle, not only from the public health standpoint, but because it is a most serious economic question in every civilized country in the world, with one or two exceptions."

In opposition also to Dr. Koch was Dr. Nathan Raw, of Liverpool, who presented the views of the English delegates to the Congress. He contested vigorously the view that tuberculosis from cattle could not be con-

Digitized by Google

veyed to human beings. In fact, the preponderance of opinions expressed was against Koch's theories.

The following are the resolutions of the Congress:

"*Resolved,* That the attention of state and central governments be called to the importance of proper laws for the obligatory notification by medical attendants, to the proper health authorities, of all cases of tuberculosis coming to their notice, and for the registration of such cases in order to enable the health authorities to put in operation adequate necessaries for the prevention of the disease.

"*Resolved,* That the utmost efforts should be continued in the struggle against tuberculosis to prevent the conveyance from man to man of tuberculous infection as the most important source of the disease.

"That preventive measures be continued against bovine tuberculosis, and that the possibility of the propagation of this to man be recognized.

"*Resolved,* That we urge upon the public and upon all governments the establishment of hospitals for the treatment of advanced cases of tuberculosis.

"The establishment of sanatoria for curable cases of tuberculosis.

"The establishment of dispensaries and day and night camps for ambulant cases of tuberculosis which cannot enter hospitals and sanatoria.

"*Resolved,* That this Congress indorses such well-considered legislation for the regulation of factories and workshops, the abolition of premature and injurious labor of women and children, and the obtaining of such sanitary dwellings as will increase the resisting power of the community to tuberculosis and other diseases.

"That instruction in personal and school hygiene should be given in all schools for the professional training of teachers.

"That, whenever possible, such instruction in elementary hygiene should be intrusted to properly qualified medical instructors.

"That colleges and universities should be urged to establish courses in hygiene and sanitation, and also to include these subjects among their entrance requirements, in order to stimulate useful elementary instruction in the lower schools.

"That this Congress indorses and recommends the establishment of playgrounds as an important means of preventing tuberculosis through their influence upon health and resistance to disease."

EPIDEMIC OF SMALLPOX IN BRATTLEBORO.

The last days of June, 1908, a young woman came to her home in the village. The following week she was taken ill with what was called "chicken pox." Three of her sisters who were away from home returned, one at a time, and were successively ill with the same disease. Other persons who either had chicken pox, or did not have any fear of contracting the

Digitized by Google

disease, called upon this family, with the result that there continued to be "chicken pox" in various sections of the village. From the first of July until the tenth of November only seven cases of this disease were reported to the office of the Secretary of the State Board of Health. At this time a physician who was called to see one or two cases became suspicious regarding the true character of the disease from which these persons were suffering. This suspicion resulted in an investigation by the officials of the State Board, who pronounced the disease to be smallpox of the modified form that has been prevalent in many parts of this country for the last ten or twelve years. The schools, churches and all gatherings of every kind were prohibited, and strict quarantine established in all cases, so that within twenty-four hours thirty-six cases were under control. By November 20 the cases that were far advanced when first quarantined were disinfected and discharged, leaving twenty-five still quarantined. It was known that a considerable number of persons had been exposed to this contagion and were likely to develop smallpox the following week. These anticipated cases numbered thirteen. They were quarantined in their homes, or taken to the isolation hospital.

Up to the present time there have been in Windham county, in Brattleboro, sixty cases. Thirty have been disinfected and released from quarantine. Seven are in the isolation hospital. Outside of Brattleboro there have been cases in Dover, fifteen; Dummerston, two; South Londonderry, two; Halifax, one; Bellows Falls, one. In West Charleston, Orleans county, there has been one.

TOWN CLERKS.

All town clerks will note that a law has just passed the Legislature requiring the vital statistics of every town to be reported monthly, before the third day of the following month. This monthly reporting will begin with January and blanks will be sent you for such reports. The reports of statistics for the last six months of this year, ending December will be returned under the old system and are due in this office in The statistics for January, 1909, should appear on the new blanks and be in this office before February 28.

MAD DOG ON THE RAMPAGE.

St[illegible]om Bridgewater he went through the town of Sherburne, wher[illegible]several dogs and a child, breaking its arm in two places, on throu[illegible]eld and Bethel, and was finally killed in Rochester. How many [illegible]bit on the way there is no means of knowing. The brain of the [illegible] sent to the Laboratory at Burlington and examination showed [illegible]was suffering from true rabies. The child has been sent to the I[illegible]stitute in New York for treatment. An order has been issued fo[illegible]zzling of all dogs in the above towns for the next sixty days, and [illegible] to be kept strictly upon the premises of their owners.

BULLETINS DESIRED.

If parties [illegible]y of the following numbers of The Bulletin will inform us to [illegible]t, we shall be glad to arrange with them to provide us with the sa[illegible]file is lacking these copies, viz. any numbers published previous[illegible]nber, 1901, No. 2 of Vol. II., No. 3 of Vol. IV., and No. 4 of Vol. V

Digitized by Google

614.0979
V2 B

UNIV. OF MICH.
MAR 18 1909

Bulletin No. 3, Volume IX.

Issued Quarterly By

Vermont State Board of Health,

March 1, 1909.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS.

The Local Health Officer and Local Boards of Health, by H. L. Stillson, Health Officer, Bennington, Vt. 3
Advanced and Simplified Plumbing, by William Paul Gerhard, C. E., Consulting Engineer for Hydraulic and Sanitary Works, New York City 16
Health Laws, With Question Box, by Hon. Benjamin Gates, State's Attorney for Washington County 23
Practical Phases of Laboratory Work, by Dr. C. F. Dalton, Burlington Vt. 36
Specimens Examined at the Laboratory of Hygiene for the Quarter, September 1, 1908, to January 1, 1909 38
State Laboratory Statistics 40
Changes in Liquor Standards 55
News Items 59

BRATTLEBORO, VT.
1909.

Digitized by Google

Digitized by Google

THE LOCAL HEALTH OFFICER AND LOCAL BOARDS OF HEALTH.

By H. L. Stillson, Health Officer of Bennington, Vt.

This subject as printed, in both the tentative and official order of exercises, is somewhat modified from its original wording, which was more nearly expressive of the topic selected for this paper: "The Work of the Local Health Officer in Connection with the Local Board, as Viewed from the Standpoint of the Local Health Officer." Even a cursory glance at the possibilities that might be included in an analysis shows it to have been a condition instead of a theory which confronted us in prior years, and that the success attained since 1892 has been predicated on an attitude of common-sense relating as well to the health officer as to the local board.

With this premise for an introductory remark, reference in illustration, it seems to me, should be made to the commencement season (at this time of the year), as the writer once before has done at a prior annual session of the school. The boys and girls of this generation, grown to manhood and womanhood, by the thousands, yea, ten thousands, have been graduated from our institutions of learning, each to choose his or her lifework. Each one is possessed of all the enthusiasm of youth; each becoming maturer with advancing years and experience. Turn forward the dial of time ten years and look backward, just as everyone of us has done, and what does each observe? Did the theory of the schools become the practice of life? Was the enthusiasm of the beginning adequate to correct all the ills which were found to afflict the body politic? Were the high ideals with which society had become invested in our minds the attitude of the public? And so on through all the labors of earlier and later years, the man and the woman found problems demanding solution; perplexities confronting every walk of existence; and each became fitted into his or her allotted sphere amid the complexities of modern civilization. How diverse the reality from the promise at the outset! So has it been with the Vermont health officer.

The parallel is not exact, however, for the Vermont health officer was obliged to become a disciple of sanitation as well as a teacher of preventive medicine. How thoroughly that duty has been performed may be learned from the records of this and the nine preceding health officers' schools. One of the most potent factors in the admirable progress already made in the education of the people, showing likewise its aims and achievements, is concisely told by *The Journal of the American Medical Association,* in the issue of June 6, 1908, wherein is printed the address of President Herbert L. Burrell, M. D., of Boston, Mass., delivered before that Association, at its meeting June 2-5. This address should be read by every health officer

Digitized by Google

in the nation, and copious extracts would be useful, if these graced the columns of *The Vermont Quarterly Bulletin*. To properly understand what follows in this paper, a sentence is quoted, to show the foundation of the educational work advocated by President Burrell, where he affirms, "Experience has shown that the lay public takes a keen interest in everything concerning medicine and its progress." This is just as true of Vermont as of the United States of America.

And why should this be true? Leaving the realm of theory, let us consider the practical application of these principles. For present purposes they are three:

1. Organization,
2. Administration,
3. Compensation and Conclusion.

1. Organization of the local board after its members have taken the oath of office, health officer included. Under the Public Statutes of Vermont, Chapter 225, as the attorney of the State Board will tell you, this body consists of the selectmen of the town or aldermen of the city, and the health officer, secretary, *ex-officio*, of said local boards of health, respectively. Section 5436 defines the duties of the health officer on his own initiative; likewise his duties as secretary of the board. His own initiative is quite broad as relates to suspected cases of contagious disease, but as regards the abatement of nuisances the statute makes the health officer the agent of the local board, constituted as before defined. Between these two points most of our trouble in Vermont arises. And yet the dividing line is plain, and as unmistakable as, for illustration, the statute duties of selectmen or the aldermen of cities. To lawfully act, the board must be organized. It should have a president, vice president, and the health officer formally elected secretary, and these elections ought to be entered on the town or city records. In towns where there are two or more incorporated villages (or in cities where there are wards distant from the business center), it has been found a good rule to locate the president within the area of the greatest population; the vice presidents (one or more) within the limits of the other villages or wards so that all the members of the board may be easily reached by the people. In my experience this method prevents much friction. Regular meetings of the board should pass on nearly every act of administration; not altogether because essential, but to add dignity and influence to the office. The board in Bennington meets weekly, and as much oftener as circumstances require. With his local board of health "at his back" the local health officer is fortified legally, and his position is impregnable.

The health officer as secretary should be prompt in his action,—night or day, and Sundays not excepted. The correspondence of the office should receive instant attention; the letters or other requirements emanating from the State Board ought to be promptly answered and acknowledged. Should a member of the State Board be called into your locality, it is germane for

Digitized by Google

me to suggest that the usual courtesies are in order. Call the local board together, introduce the state official, and be social. These amenities of life may stand one in good hand when his own time of trial and perplexity cometh.

2. The administration of the local board touches a point where there may be as many minds as there are individuals, but we venture to give our experience in general terms. Following the "rule of three," this subtopic should be divided:

(*a*) The health officer and his records.

(*b*) The selectmen, or aldermen.

(*c*) The public, considered as a local community.

(*a*) *The Health Officer.*—There are health officers, *and* health officers, in Vermont, as well as the implied classification among others. The success of his administration depends greatly upon the attitude assumed by this official. Experience proves to me that no one, be he high or low, rich or poor, learned or illiterate, but will respond to sympathy. It makes all the difference in the world whether the health officer presents the mailed fist of an officer of the law, or that of a neighbor and fellow citizen; whether he approaches the family afflicted in the spirit of one who desires to help them out of trouble, or as a dictator of conduct. A dictator the health officer certainly is, both by the statute and the common law, but should the assumption be ever before the official that his neighbor is in trouble, and that, primarily he is there to assist him, the necessary quarantine (of itself) will become more effective and more harmonious for both. While all cases of quarantine should follow the strict rule (likewise all questions of nuisance), yet it should be emphasized that health regulations stand upon the same foundation as do other police matters of good, wholesome government; not because the statute says *shall,* but because it is *business* to conserve the safety of the public; identical with the fundamental principle *why* taxes are and must be levied for the support of said government. This attitude appeals forcibly to all sensible people.

Early in my career in Bennington this motto was adopted: "The greatest amount of liberty commensurate with public safety." Latitude of of this character in health administration demands the exercise of acute discrimination. Whether it will work elsewhere I am not prepared to say, but in an experience involving several thousand cases, there has been just one prosecution for abatement of nuisance—and he a New Yorker who thought he could do as he pleased in Vermont—and one in relation to quarantine and contagious disease. The last named was a smallpox importation from Wilmington, in 1903, and the health officer did not win.

The records kept are very important. The first entry on the Bennington minutes was made by me on July 26-28, 1893, and reads as follows: "Board of health *vs.* family of A. R. Sweet, 334 School Street. Reports of third and fourth cases of diphtheria by Doctor Putnam. Quarantine and attention by Stillson. Two notices to State Board. Quarantine raised July 31, by

Digitized by Google

Dr. Putnam." At that date the result was not noted, but memory serves to show that possibly both patients died, as had perhaps one or two more of those previously reported to my predecessor. The fees received were $1.30.

This docket was opened by a "Roll of Physicians" practicing in the jurisdiction, together with the post office address of each; and has been kept corrected to date.

The first entry, account of nuisances, was made August, 1893. "Board of health *vs.* Capt. H. D. Fillmore, tenant houses at 118-120 Adams Street, corner Browning Place. Inspection July 29 by full board. Decision, both privies to be cleaned, and accumulation next to fence removed. Notice served August 1, 1893; abatement reported to health officer." The fees in this instance were $3.00, divided.

It is needless to say that the records have improved in style nearly as much as the administration from 1893 to 1908 has progressed with the growth in sanitation and preventive medicine.

In connection with these docket records there have been kept reports of contagious disease, the book being a leather-bound quarto, demy size, of some 800 pages, lettered: "Records, Board of Health, Town of Bennington." Running across two pages are these headings: "Date," "Physician Reporting," "Name of Family," "Name of Patient," "Residence," "Sex," "Age," and "Remarks." The diphtheria cases in the "Sweet family" are here found recorded and every occurring case of disease since reported, down to date. This is why it has been possible to trace in Bennington the several instances where families have had the measles the second and third time—for illustration—in 1900, 1903, and again in 1906, proving the present theory that, while one attack of measles usually renders the patient immune for life, yet there is no certainty of immunity after two years; for we possess the records of family physicians, showing *three* attacks of measles on the same child within six years; and not only one child, but several in as many families.

Another matter has been called to my attention: The biennial reports to the State Board of Health, and thence to the legislature. With the Bennington system of records and the blank of January 1, 1908, both before me, I cannot see why a perfect summary of the requirements is not possible by every health officer. Inquiry reveals the gratifying information that these reports from towns and cities have improved 50 per cent over those first sent in. These statistics are requested so that the Vermont reports may become valuable for reference as the years pass along. The health officer should keep these records for his own protection; for the closing of the year's work does not always "end all." My records of 1903 were investigated, recently; and, while this was the first time, it was satisfactory to know that the result of the inspection and my own report to the town, were identical, even to a cent.

The final word to health officers is: Spare yourself nothing in the way

Digitized by Google

of rendering your labors efficient. One illustration—because I may take too much time—that of fumigation. There are all sorts of agents on the market with which to fumigate; but in Bennington the 40 per cent solution of formaldehyde and potassium permanganate are the ingredients used. The so-called easier methods do not appeal to me. Why?

(1) Get out your text-books on chemistry, and if you sold them when you graduated, consult some encyclopædia, like Doctor Beach's "Americana," and ascertain what the coalition of these two agents produces. Note the residuum: one of the dioxids. The quantity to be used is laid down by our State Board in the "Suggestions as to the disinfection of premises during and after quarantine"; but experience will demonstrate to the user of these agents various modifications in the nature of greater efficiency. The gas thus produced is a corrosive poison, it possesses considerable penetrating power, and has never been improved on as to methods of use. I ask again, Why?

(2) The method has, within itself, all the qualities of perfect fumigation. The solution and the hot water added introduce the desired humidity into the apartment; all the gas possible to be generated is thrown out within (usually) a few moments; this gas has no injurious effects upon the dwelling or what is contained therein; and, should the temperature, which is important, be maintained at 68° or above, the gas will permeate everything, and pass through the panels of an ordinary door. What more could be desired? Instead of shutting up rooms, where several are to be fumigated, leave the doors open, as the gas is possessed of a cumulative character, when its volume is thus increased. Never permit an inexperienced person the use of these agents, because a full inspiration of this gas will reduce the strongest pulse to the danger point.

(*b*) ***The Selectmen or Aldermen.*** Exceptions prove the rule, in health as well as in other departments, and so I am often pained to learn that friction sometimes exists between health officers and local boards of health. Of just such men as these is the *personnel* of the legislature which gave us the State Board of Health in the first instance, passed our laws and amendments thereto, established the Laboratory and generously provides for its support. Why is not the situation ideal? In a wider sense these Vermonters, or men like them, have left their impress on the upbuilding of the great West, and become trusted officials on the bench, in legislative halls, in the learned professions, in business, in mechanics, on the farms, in the Church, and in every walk of life. Those who remained in Vermont and became important factors in the leading position occupied by the state both at home and abroad, certainly these men are ***not*** our citizens who quarrel over matters of public safety. Surely the rumors have misrepresented the selectmen of our towns and the aldermen of our cities. I have, for years, been awaiting the opportune moment to say this.

The interests of the health officer and of the local board, of which he is

Digitized by Google

secretary and executive, are identical, and the relations should and must be intimately cordial. This is an illustration of how the relationship might work: A case of scarlet fever is reported at Jones's. The health officer calls up the selectman nearest the Jones residence and says: "There is a case of scarlet fever over at Jones's, what is best to do?" The reply may give the officer a clue as to the characteristics of the head of that family, which will be of value as to the manner of diplomatic approach; the responsibility is divided as to the disagreeable phase, and the same common sense is applied which is exercised in matters of importance in town or city affairs. For, as implied, these associates of the board of health are the men chosen by vote of the municipality to manage its local government. Just contrast these ideas with the usual aspect from the health officer's standpoint.

(*c*) *The Public,* considered as a local community. Here the circumstances must be taken as appear from the environment. Like the Supreme Court's decision in the "Middlebury pigpen case," every political division of Vermont must be a law unto itself. No general rule may be laid down, but reasoning from analogy upon what has been said, it seems to me no one need go far astray from the common sense path. Should the health officer approach his duty, like unto one who really intends to help, aid and assist his fellows, doing whatever is consistent to keep the wage earner at work during the periods of quarantine; urging upon the indolent and careless the necessity of sanitation for safety's sake, my word for it, based on an experience of fifteen years, there will be little trouble in producing the desired results.

3. Compensation, and conclusion. Adequate payment for services will never become the rule of office-holding in Vermont. The genius of the Commonwealth from the beginning is against it; yet the jurisdictions possessing competent health officers are becoming more and more liberal. Possibly this is true, because the clear-headed Vermonter is fast becoming convinced that *cheap* service is *dear* at any price. As I stated at a prior school, the health officer who dignifies his duties to the rank of a profession, and revels in his work because he loves his fellowmen, and seeks to do them good in this way, must expend one thousand dollars in time and means for three hundred dollars actual receipts in cash payment. This is as true of the medical profession, on the average, as of the health department.

The crowning characteristic of the ideal health officer consists in his being no respecter of persons,—he must use all alike. He should know neither friend nor foe in his business, including his own family. I once told a "doubting Thomas," that I would prosecute one of my own household as quickly as I would him should a certain quarantine be broken, and the dogmatic manner of speech left no room for doubt in the questioner's mind.

A word personal and I close. In this city, a few years ago, being inaugurated president of a Vermont Veterans' association, as I faced those assembled the thought, for the first time, came to me that age was approaching. On this tenth occasion of my appearance in this school for health

Digitized by Google

officers, possibly I may be pardoned for the reminiscent tone pervading this paper. The mitigating circumstance is that every statement, suggestion or assertion therein is founded upon fact and is presented with a sincere desire to assist others.

Gentlemen, I thank you for your attention.

DISCUSSION.

Dr. A. C. Bailey, Randolph.

The excellent paper to which we have just listened deals with a subject that concerns us, it seems to me, as much as, if not more than, any other that we have on the program for this meeting.

About twenty-one or twenty-two years ago I was made health officer of my town and have been its health officer consecutively with the exception of three years which closed last November. Things are not now as they were the first few years of my service. For the first six years, all the compensation which we had was the honor we received; for the next twelve years we had some compensation; then for the three years when I was not health officer, the compensation was slightly increased, until now we have more compensation than we have ever had before.

The duties of a health officer are important, in a good many ways satisfactory and in a good many other ways unsatisfactory, and the compensation received is much less than the value of the time we put into the work if we do our duty or even try to do it.

The work is primarily to try to educate the community as to what the law is. First, the health officer should know what the laws are that govern us and by which we have authority to do what is expected of us. I do not pretend to be conversant with all the laws that govern us, yet I think I know more about the matter than some of the health officers with whom I have come in contact while trying to do my duty.

As I have said, the first duty is to know what the law is, and to be thoroughly conversant with it and able to answer every question put to us and do it intelligently. As we go about doing our duty, abating nuisances or issuing notices or releasing cases from quarantine, we should do our duty with the dignity which belongs to the office we hold and then we should be sure that our work is respected. We make enemies, but we should be fearless no matter whether the trouble is in our own family or that of our next door neighbor.

Very often when we are obliged to quarantine a family we lose that family, if we are practicing physicians, but we have to be cool and level-headed and never get out of patience with the people whom we meet. And unless they willfully disobey us, we should educate them rather than prosecute them.

I always try to keep in touch with the selectmen of my town and whenever anything comes up that concerns the public as a whole, I always bring

Digitized by Google

the matter to the attention of the selectmen, all if necessary, but at least two of them. I never go about the village or try to abate a nuisance unless I bring two of the five trustees into the case, and if there is any question at all about it, I bring the full board and discuss the case thoroughly before we take any further steps to abate the nuisance. I believe this keeps us from litigation.

Every locality has its peculiarities. You cannot do the work in your town, perhaps, as I can in mine. We should be conversant with the law; know it thoroughly ourselves; and then endeavor to teach the people in every possible way as to what they can and what they must do. If you try to do your duty in a gentlemanly way, but be firm, you very seldom meet opposition.

I believe if we carry a steady hand and are gentlemanly whenever we go about doing our duty that we will win in the end.

Dr. D. D. Grout, Waterbury.

Although I have been a health officer and have attended all of these schools of instruction, I am not one at the present time, and do not want to intrude on your time, but this question of disinfection interests me very much. A short time ago a young man went about through this state retailing "Formaloid," a substance that was evaporated by a spirit lamp to give the health officer the idea that he was disinfecting. I read some of the names of men who are here, who endorsed the stuff. I told him he should be sent to state's prison or crucified for going about through the country attempting to deceive the people in that way. The State Board of Health have gotten up some literature giving explicit instructions, and if you will follow them closely and accurately, you will probably meet with success. My personal idea is that disinfection as carried out by the average health officer is a delusion and a snare. It does not disinfect and it makes people have confidence in what you have done and they act accordingly and suffer accordingly. When I was in Illinois, I went to the largest institution there; it comprised fifty buildings. I saw one building being demolished, the interior of the building being entirely torn out. That building had accommodated between thirty and forty patients and the cost was probably in the vicinity of $20,000. I asked the reason for this destruction. The reply was, that several years ago there developed a case of cerebro-spinal meningitis in that building. The building was thoroughly cleaned and fumigated afterward, scientific man from Chicago having charge of the work. The result was, later on more cases of cerebro-spinal meningitis developed. The building was again cleaned and fumigated, and still another case of cerebro-spinal meningitis. Then the authorities decided to tear out the inside of the building. The superintendent said, "There is no way to get rid of that disease unless we destroy the interior." I have tried everything and I have worried when part of our buildings got infected at Waterbury. I am just as positive that three fourths, seven eighths, or nine

Digitized by Google

tenths of your so-called fumigations amount to nothing as I am that I am here. It deceives you and it deceives the general public. Of course the nature of the disease governs your measures. It would not be advisable to destroy the interior of a building for the mild diseases, but we can not be too thorough when we deal with those of more gravity.

Edmund A. Graves, Esq., Sunderland.

It has been well said here that we need instruction; it is my opinion that that is all right, but we don't go quite far enough. I think we need to instruct the people. Furthermore we should show them the penalty if they do not follow out, to the letter, the law as it is laid down to them. We should instruct them regarding the penalty for disobedience of the law, not the laws laid down by man, but the laws laid down by nature. I don't know just how to get at this matter; there should perhaps be some literature distributed to the health officers of the different communities, perhaps a commission should be formed, but possibly even these two means would not be best, but I feel that there should be some provision made for the instruction of the people that they may know the penalty for disobedience and the necessity of living up to the laws of nature.

Dr. E. E. Whitaker, Newport.

We have heard quite a little about disinfection and about doing it thoroughly so that our city visitors shall not contract the disease. I believe in disinfection as thoroughly as any man in the room; it is one of the grandest things to protect those who come into a house after a contagious disease to clean up said house. It is my belief that a room or a home in which a contagious disease has been, must not only be disinfected, but the home must be rid of the paper on the walls; it must be painted or whitewashed, and unless these precautions are taken, the disinfection will be about as effective as a ten cent whistle would be for a fire alarm in the city of Burlington.

Mr. W. H. Lake, Wells.

I was merely going to tell how I managed the business in my town. We have had one selectman for four or five years and I have been on the board part of that time. They usually meet the first Saturday after town meeting to organize and I meet with them. We organize and for the past three years they have voted and I have made record that they will go ahead and sustain me in everything I think is right. For instance, a nuisance comes up. I do not have to go to them to get the authority to abate it. I go ahead and make an inspection and do what I think is right. I serve a paper on the one committing the nuisance and if he does not attend to it within a reasonable time and is able to pay for it, I have it done and make him pay for it. We have no physician in our town and we are caused a great deal of trouble regarding death certificates. I have been very much

Digitized by Google

pleased with the papers and discussions given at this meeting. This is the eighth year I have attended these meetings and I must say they grow better every year. The first year I attended these meetings I went home and found smallpox in my town. There were eight or ten cases. I certainly should have resigned as health officer as soon as I had seen them if I had not been instructed by Dr. McCollom of Boston. He was at the meeting and gave us a very excellent talk on the subject of smallpox and when I found I had cases in my town, I went right ahead and did what he told us was the proper thing to do. I felt as though I was well repaid by the instruction which I received at that meeting.

Dr. C. M. Campbell, Rochester.

I am sure that after listening to the able paper by Mr. Stillson, which was so fully discussed by Dr. Bailey, you will not expect much from me. However, if you do, you will be disappointed.

There is one point which I wish to speak upon. Certainly the health officer holds a very responsible position. He should possess the wisdom of Solomon to perform his duties in an acceptable and intelligent manner.

We hear so often of friction between the board of selectmen and the health officer. This may come from an economic standpoint. I wonder how many of you have thought of the expense to your towns caused by your attendance at these meetings, and whether the people haven't the right and the proper right to ask, "Are we getting value returned for what we pay?"

Most of us come from rural districts, from these hills where the livelihood is eked out from the rocks and where money is scarce. The expense comes home to them and they have the right to expect value returned. If the health officer draws his salary, if the health officer fills the position for which he is appointed, the community expects him to protect their health. The duties of the health officer are governed by the locality which he serves. The strictly rural communities usually have the good old-fashioned grandmother who does not take any stock in the bug theory and therefore makes our work harder, so you see we have different propositions to meet and overcome. Suppose we fumigate a house after a case of scarlet fever. A month or so afterwards another family moves in there. One of the little children is taken sick, contracts scarlet fever and dies. We must naturally ask ourselves if there wasn't some important feature of our work neglected or overlooked. Thoroughness, then, should be the most essential characteristic in the performance of our duty. It should be our aim to discharge the duties of the office in such a manner that the board of selectmen and voters generally must see that the money paid for the protection of their homes from disease is capital well invested. And in order that we may be better fitted for our work we should give close attention to the papers prepared for these meetings, regarding it a high privilege as well as a duty to get knowledge, especially when the state is so liberal in giving us the opportunity to acquire it.

Digitized by Google

Dr. Walter L. Havens, Chester Depot.

I would like to ask if the opinion expressed by Dr. Whitaker is the opinon of the majority of the members of this school.

When disinfection is carried out as we are instructed to do it to-day, sealing the room with paper over all cracks and holes, fumigating for several hours with sufficient amount of properly prepared permanganate of potassium and formaldehyde solution, and washing the woodwork and windows with an antiseptic solution of standard strength, it is safe to infer that disinfection is complete, or should we strip the paper from the wall and repaper and repaint the room?

Dr. W. N. Bryant, Ludlow.

I wish to offer a single suggestion in connection with the paper just read and it is this: I have found it very useful in our town, and I believe all you gentlemen will find it the same if you will try it, to have stationery printed for use in the work as health officers.

I have both paper and envelopes printed "Office of the Board of Health" and use this in all official communications, such as the abatement of nuisances, orders for sewer connections, etc. Paper printed in this way has a more business-like look and carries more authority with it.

In our town much of the business of the health officer consists in enforcing the law concerning the connection with sewers. This has proven, as no doubt it has elsewhere, a source of considerable trouble and occasionally requires a legal notification to make the needed repairs within a specified time. For this purpose we have special blanks prepared in a letter form quoting the section of the law bearing upon this point, ending by saying "in conformity with the above, we notify you, etc.," naming a reasonable time like ten days, twenty days or so. These should be signed by the *whole board* with their own hands and there can be no trouble.

Our selectmen take a lively interest in these matters and one or more of them usually accompanies me in making inspections. This matter of the selectmen taking a personal interest makes it much easier for the health officer.

I would say have printed stationery, use it freely, thus giving the impression that you are doing business on business principles and in a business-like way.

Dr. H. L. Stillson, Bennington.

The selectmen of my town every year have voted that the "health officer be and he is hereby empowered to abate all minor nuisances"; and that goes upon the records of the selectmen and as well on the records kept by the health officer. I would say, however, that an order based thereon is worth about as much as the paper upon which it is written. I certainly would never begin an action on that. According to the Middle-

Digitized by Google

bury decision, it should be *sui generis*. It is very essential that the health board take the oath of office. The constitution of this state requires every officer to take the oath of office before he enters upon his duties. I have taken the oath of office since 1894. It costs nothing to take the oath of office and swear in, in any town clerk's office, and then if you have some one who has a pile of rubbish, and you have adjudged it a nuisance, and you want him to move it and no one will do that; all you have got to do is write him that you have the authority to make the order, and charge the expense up to him; then you will find that he will attend to it right away.

The economic question is what bothers me most. There existed a nuisance on the land of one of our leading men. I took him to it and said: "Now, here is something for you to do. It is a nuisance, and you must see to it." He said he would attend to it right away, but he didn't. Finally I had to take care of it. How much could I charge? Probably about $2.00. I edited our Republican newspaper [the *Bennington Banner*] twenty-five years, and I advocated and urged low rates of taxation. I have been connected with all the people more or less during these years; I published notices of their births, said a good word when they graduated from school; had something to say about them when they were married, and a consoling word when their friends and relatives died. So my position is a little different from that of most of you. There is one thing you need and that is money, and then you are independent and not dependent upon the public for a living. It makes a man feel fearless.

We had three cases of measles lately. The three cases came from New York City. They had come from the city of New York in order to avoid quarantine, but they were put into close quarantine when they arrived in in Bennington. These people were perfectly able to stand the expense. I said to them, "You are not only exposing the summer colony, but you are exposing us as well," and so they were perfectly willing to go into close quarantine.

We have the actual authority in this state to do just what we are doing. I have not only the opinion of Judge Darling but also of one of the judges of the Supreme Court. It is convenient to have some law to quote to those who are ignorant.

I was bothered one afternoon by a man who came along with about an ounce of formaldehyde which would fuse and throw off a gas with a little candle half an inch high. His appeal to me was, "See how handy it is." There is nothing handy in this business. Fumigating isn't all there is in cleaning up after a case of contagious disease. Every thing should be gone over with bichloride of mercury—one to 500 or 1000—and that should be done after fumigation. Bedding and everything washable should be put into a solution; let it stand for twelve hours and wring out and dry in the ordinary way. It takes about a full day to prepare a house before fumigation. I sometimes use pounds of potassium permanganate, with its cor-

Digitized by Google

responding ratio of formaldehyde—40 per cent solution—in fumigating a single house. It all depends upon the size of the house as well as the condition. My advice is, put in enough to do the work. You take the permanganate, place it in the dish, turn on your formaldehyde and get out of the house and watch it. In four or five seconds it begins to steam. If you put in a gill of boiling water, in thirty seconds the room will be full of steam, and the combined agents will have generated all the gas possible. I studied this out about five years ago. I did not have a formula to go by. The cracks, keyholes and everything should be thoroughly sealed. You can't stay in the rooms and be safe after you have started the work. This salesman of whom I spoke to you said: "You can have three or four of these little candles in your pockets and when you have a house to disinfect, pass them out to the head of the house, and tell him to disinfect his premises, and you will have no trouble at all." I want simply to say that thoroughness is the only point of success.

I can tell if the formaldehyde is up to the standard. There was a time when I would only use Mercks & Co.'s; now anything that bears the stamp of the United States is all right. We have reduced the price of permanganate from 45 cents to 28 cents, and we pay 22 cents instead of 60 cents per pound for the solution.

Something has been said regarding cerebro-spinal meningitis. When you go home get down Doctor Beach's "Encyclopædia Americana" and read the article on cerebro-spinal meningitis and familiarize yourself with this disease. When you are in doubt regarding the diagnosis at the outset, get down your books and look the matter up. You all should provide yourselves with Harrington on Public Hygiene. It is a book that will give you more ideas regarding your office than any I know of.

Physicians are better professional men than the rest of us. Their thoughts are turned in another direction. When your doctor is your health officer he comes to you and he thinks of a lot of things you would not think of, but he also has the care of the *disease* on his mind. If you get the right kind of a man who is not a physician, it is better for such an one to be health officer; i.e. to perform the executive duties of the office. The ideal theory is to divide the labors, as is now done in such states as New York, Massachusetts, and others.

Digitized by Google

ADVANCED AND SIMPLIFIED PLUMBING.

By William Paul Gerhard, C. E., Consulting Engineer for Hydraulic and Sanitary Works, New York City.

Some years ago I delivered at your meeting of health officers a lecture on "Plumbing, the Old, the Modern and Advanced Systems."

The gist of this lecture was the simplifying of plumbing work. In large cities like Boston, New York, Washington and Chicago, any quantity of elaborate and complicated plumbing may be seen. Wherever possible I have always tried to advocate simplicity in arrangement of plumbing work. There has been hardly any advance made since that time, and I shall find it difficult to present any really new ideas. My endeavor will therefore be to emphasize the general and leading principles, which form the foundations upon which all systems should be based. I intend to illustrate this with some lantern slides, and to thus make a further plea for *simplicity* versus complication.

Plumbing work comprises means and appliances for supplying buildings with water, for removing water fouled by use and for removing storm water from roofs and paved courts and areas. In the following I shall, owing to the lateness of the hour, consider only the removal of the water which has been used in buildings. This removal is accomplished by a system of fixtures, traps, waste, soil and drain pipes, with the necessary vent pipes; these together constitute the house drainage system.

The individual house drainage systems form the units composing together the joint sewer system of a community. To be effective the house drainage system must be correctly laid out and operated properly. Every such system should fulfill cetrain requirements, which I will state briefly.

1. The house drainage system should remove from the building quickly and completely all liquid wastes, including human excreta, water used for washing and bathing purposes, kitchen water, and sometimes, though not always, the storm water. The removal of the house sewage should be effected before decomposition sets in. It should be accomplished without contaminating the soil, the air or the water.

2. A house plumbing system should be so arranged that under no circumstances will there be an escape of sewer air into any room in the building. This is accomplished by the proper and safe trapping of all outlets.

3. Foul gases, originating in the house pipes, should be diluted, oxidized and thus rendered innocuous. The entire pipe system should be *without long dead ends,* where the air would stagnate.

These are the three general requirements which every system must fulfill.

I come now to some more specific advice, contained in the following *maxims:*

Digitized by Google

1. Each building should have a *separate* connection with the street sewer.

Large buildings may require *several* connections and these are better than one pipe of a very large size.

2. All the drain, soil, waste and vent pipes within the building and up to a point five feet outside should be of heavy cast iron pipe, with lead caulked joints, or of galvanized screw jointed pipe with recessed drainage fittings. No earthenware or tile drains should be allowed within the building.

3. All pipe conduits for sewage should be constructed air and water tight to prevent leakage of sewage and of sewer air.

4. All the horizontal and vertical pipes should be carried as straight as possible. Offsets on vertical vent lines should be made under 45°.

5. On horizontal lines use Y branches, not Tees, for junctions or connections.

6. All the pipe conduits, traps, cleanouts as well as the fixtures, should be kept exposed and easily accessible for inspection or repairs.

7. All the pipe conduits should be of *minimum* diameter, consistent with volume of sewage or waste water to be carried, because in this way the flow of water is more concentrated and the pipes are flushed out better.

8. All pipe conduits should have good supports, good alignment and a sufficient fall.

9. All soil and vent pipes should be extended the full size to the roof, or even enlarged at the roof to prevent closing of the pipes by hoar frost in cold climates. No pipe above the roof should be less than four inches.

10. The number of vertical stacks in a building should be reduced to a minimum, and this can be accomplished by concentrating the plumbing work and making branches as short as possible.

11. Reduce the number of fixtures and arrange them as much as possible, and as much as is consistent with convenient use, in vertical groups. A single soil pipe may answer for the fixtures on a number of floors.

12. Place plumbing fixtures only in ventilated rooms and confine the plumbing to bath and toilet rooms, to kitchen, pantry and laundry.

There is a question which has been brought up from time to time and that is whether it is feasible and safe to have stationary wash basins in the sleeping rooms. In general I do not advise it. I think the rules laid down by boards of health should not permit it because there is always a chance of some joints opening up and letting sewer air enter the apartment. Personally, I should not hesitate to have such a basin in my sleeping room, but I should give the plumbing very frequent inspections and tests. With regard to the location of the bathtub and the water closet I would say it is a general American custom to put these in the same room, whereas in English houses and in many of those in Continental cities the water closet is placed in a separate apartment. For a great many years I have spoken and written against this common American practice which I consider in-

Digitized by Google

convenient, particularly for the smaller houses. In these, it is, in my judgment, very much preferable that the closet and the bathtub be in separate compartments.

13. All the plumbing fixtures should be trapped separately and safely. The trapped waste from one fixture should never pass through another trap before reaching the soil pipe or the house drain.

14. Fixtures should be of non-absorbent material; all sharp corners should be avoided, glazed and smooth surfaces are required. Wood and porous stone should be condemned as unsuitable.

15. Modern plumbing work dispenses entirely and properly so with the former wooden enclosures of fixtures.

16. There are certain pipes in every house which should never be connected to a sewer or soil pipe, for instance the overflow pipe from the house tank and in particular the wastes from refrigerators or ice boxes. These should drip over a trapped and water-supplied sink.

17. Avoid having in the house any fixture which is not in daily use, as the evaporation of water will soon unseal the trap.

18. Each plumbing fixture should be arranged to empty quickly, like a flush tank. All pipe conduits should be well flushed, and if the grade is slight, special flushing appliances for the house drain should be provided.

These are the leading axioms, which I shall ask you to keep well in your mind. Note also the following *summary* of requirements.

1. Good and durable material.
2. Good workmanship.
3. Good supports, fall and alignment.
4. Proper junctions.
5. Direct and short runs.
6. Accessibility of all parts.
7. Safe trapping of the fixtures.
8. Perfect ventilation.
9. Powerful flushing.
10. Instant removal of all wastes from the building.
11. Noiselessness in action.
12. Protection against freezing of the plumbing.
13. Prevention of unnecessary waste of water.
14. Simplicity of arrangement, concentration of work.
15. Avoidance of all complicated mechanical apparatus.

These rules should be applied, where the plumbing is in charge of a health officer, to all new work for which plans are submitted to him. They also should be made to apply to inspections of old plumbing work.

Let me mention here one popular fallacy, viz. that "only nickel plated plumbing work" can be sanitary. I want to assure you that you can have just as sanitary plumbing work if you use iron or lead piping, which can be made to look well by aluminum bronzing, or enamel painting.

Digitized by Google

The plumbing rules and regulations should be as concise and brief as possible. They should be general and not burdened with unnecessary details. They ought to be progressive in spirit and give the health officer discretionary power in all matters which are, or may seem to be, debatable.

All rules should require the filing and approval of the plans and specifications by the proper party. They should require a notification of the tests and also the actual execution of the tests and the making good of any defects which the tests show.

Not many state boards of health have drawn up plumbing rules. For briefness and excellency I endorse the rules which have been issued by your State Board of Health. They were submitted to me for examination and revision, but I hardly found it necessary to add anything to what the rules already embodied.

Note.—The lecturer brought with him a set of thirty lantern slides, his intention being to dwell more in detail on the views and explain the rules laid down by him with the aid of the slides. Unfortunately, the available electric current was not sufficiently powerful for the lantern, and the slides had to be omitted.

The following is a list of the slides:

1. Section and view of old-fashioned bathroom plumbing.
2. View of modern bathroom.
   The old enclosed plumbing work contrasted with the modern open and exposed work.
3. View of another modern bathroom.
4. Types of older water-closets.
   Old types now gone out of use: pan, valve and plunger closets. Types still in use: long and short hopper closets.
5. Types of modern water-closets.
   Pedestal washdown, siphon and siphon-jet closets. Use of high and low tank. Flushometer valves.
6. Types of traps.
   S-trap, with vent; mechanical traps; bottle and drum traps; non-siphoning traps.

7 and 8. Back water valves.
   Uses of back-water valves.

9 and 10. By-passes in plumbing work.
   By complicating the system with unnecessary "back air" or trap vent pipes, new dangers arise.

11 and 12. House drain traps and fresh air inlets.
   Defective and improved arrangement of fresh air inlets.

13. A properly arranged refrigerator waste.
14. Types of wash basins.
   Explanation of the various styles in use.
15. Improved type of urinal.

Digitized by Google

16 and 17. Plan and section of a city house showing location and arrangement of plumbing.
18. Cellar plan of a large modern residence, showing the house drainage system and the arrangement of the water supply.
19. Diagram showing application of the water pressure test to plumbing of new buildings.
20. Smoke testing machines.
21. Diagram showing application of the smoke test to old or new work. Explanations regarding manner of making the different tests.
22. Diagram of a complete house drainage system, simplified by the use of non-siphoning traps in connection with thorough venting of all main stacks.
23, 24, 25, 26. Diagrams illustrating in detail the advanced or "one-pipe" system of plumbing.
27. Typical section of house showing the present or "two-pipe" system.
28. Typical section of house showing "one-pipe" system.
29 and 30. Diagrams illustrating *simplicity* and *complication* in plumbing work.

DISCUSSION.

Dr. C. M. Campbell, Rochester.

I would like to ask Mr. Gerhard a question. When you were stating your maxims you made the statement that the bathtub and the closet should be in different compartments. I want to know if this is from an æsthetic or practical point of view. I think the two are located in the same room in the majority of buildings in my community, and I would like to ask if you consider it dangerous.

Mr. Gerhard.

You can safely arrange the two fixtures along side of each other in the same room, ventilate well, provide proper flushing, and they may be considered perfectly safe. My recommendation had reference to practical advantages obtained by separating the fixtures. In my judgment a water-closet should not be in the apartment devoted to ablutions and bodily cleanliness. Where the fixtures are separated, one member of the household may use the bathtub, while another occupies the closet.

C. F. Ball.

In regard to testing the plumbing for effectiveness, I want to ask whether the water pressure test is sufficient without any further test, and if a further test is deemed advisable, what test is the most practical and most readily applied by the ordinary health officer?

Mr. Gerhard.

The water pressure test is applied to see if the rough work is tight;

Digitized by Google

it is a very important test, but to my mind there should always be a second test when the entire work is completed and the fixtures set. The reason for this is: there are certain joints which are made after the water test is applied and it is just as necessary to know if those joints are made properly; for instance, the joints at the wash basin trap and the floor joints of water-closets are always made after the water test. The best final test to apply is the smoke test, or the smoke test combined with some oil of peppermint. The smoke penetrates all the branches and if you use some peppermint with it the bellows will force the vaporized peppermint oil into those branches, and thus will soon show if there are leaks.

C. F. Ball.

If a city or town was to apply only one test, which test would you consider the most efficient and necessary? I can't get our board of health to do anything with the smoke test. They say they have used the water test and that is enough. It seems to me if we are to make only one test, that we should make the smoke test. What is the experience in other places? Provided the city or town would consent to the cost of only one test, which would you prefer?

Mr. Gerhard.

The water pressure test will test nine tenths of all the joints that might leak. The smoke test, however, accomplishes a few other things. If you apply a smoke test you can readily find out if the vent pipes on the roof are clean, free and unobstructed. The pipe may have been all right when it was put in, but frequently things are dropped in and plug up the pipe and then the smoke test will show whether that pipe is properly vented or not.

C. F. Ball.

I brought this question up because the plumbers are setting their water-closet bowls on the floor with a putty joint and do not use brass floor plates, bolting it down in a proper way, and I know the joints leaked. I had no way of holding them to it. The whole stack pipe might be tied up if that joint leaked and I wished to have the smoke test applied. Was I right?

Mr. Gerhard.

You were perfectly right. I am surprised to hear that your plumbers are still setting water-closets with putty joints on the floor. If some plumbers in Vermont are in the habit of doing such things, I advise you to insist upon the smoke test.

William Lindsay.

Of what use is a wall trap and fresh-air inlet in the plumbing in a house connected with a sewer system which is well ventilated?

Digitized by Google

Mr. Gerhard.

You will find in your rules that it is optional with the health officer whether to require such a trap or not. If the system is new and is well flushed there is no necessity for the trap on the main drain nor for the fresh air inlet.

Mr. Piper, Panton.

I would like to ask about a simple method of disposing of the sewage in country places where we have no sewer connections. Some one spoke of a settling basin being efficient and cheap and I would like to get a little fuller information regarding that settling basin and the method of construction.

Mr. Gerhard.

The settling basin you refer to is the septic tank. It is nothing better than a cesspool, constructed watertight, with inlet and outlet pipes submerged. Through such a septic tank the sewage is supposed to pass with slow velocity and during its passage the anærobic bacteria act on the sewage and cause a partial liquefaction of the solids. With country houses you should have in addition to a septic tank, a flush tank connected by an overflow, and in connection with the flush tank a network of tiles close under the surface of the soil, which may be grass land. Then let the liquid tank be emptied once a day into these lines of tiles. The liquid will settle away and bacterial action will take place in the upper layers of the soil and cause the sewage to be purified.

Dr. Henry Tucker, Brattleboro.

I am really unable to discuss the paper because I agree entirely with the paper. There is nothing I would find fault with. I most heartily endorse everything that has been said.

The great difficulty I have met with is the entirely inadequate force of plumbers to do the work. The closet at the dead end of the soil pipe hasn't been entirely eliminated yet. The fight which we need to make is against the earth closet. So far as it is possible to connect with the sewer, we insist that every house be connected with the sewer. I believe the earth closet and the housefly are more potent carriers of disease than milk, water and a good many other things combined.

Digitized by Google

HEALTH LAWS, WITH QUESTION BOX.

HON. BENJAMIN GATES, STATE'S ATTORNEY FOR WASHINGTON COUNTY.

I am very thankful for the opportunity of saying a few words to you. The hour is getting rather late and my remarks will be short.

There are three departments of the government: (1) The executive, (2) the legislative, and (3) the judicial.

The judicial department determines the rights of property as between man and man.

The legislative prescribes the laws of the state, regulating and providing for the public welfare.

The executive department is to look after the enforcement of the law.

When the timelock of the constitution of the state of Vermont comes around, I recommend a change. I would propose when that time comes that we have what we could call a health department of the constitution. As I have said before, the judicial department determines the rights of property between man and man. The health department determines the right of health between man and man, because one man can destroy the health of a whole community by his actions. He may communicate disease perhaps because of ignorance, and then, too, it may be willful, and therefore I believe the people of the state of Vermont ought to rise up and say that there ought to be more attention paid to the health department to preserve the health of the state, for it has been well said that the health of the nation is the wealth of the nation.

A health officer in a community is sometimes called a fool. I think you will agree with me on that statement. I think you will understand what that means, you who are health officers, and I think you will agree with me that the reason is that the community at large in which you live does not understand the development and formation of disease, therefore it is a process of education on the part of the health officer, made by the State Board of Health and the Laboratory of Hygiene. The Laboratory of Hygiene is the *"life saving"* station of Vermont, and the best methods are used to instill into the minds of the people of the state the great need of knowing, and the great need of understanding, the development and the causes of disease. The result of the whole thing is a better understanding of health laws and health institutions.

I believe in the prosecution of people sometimes even when they are ignorant. I believe there are times when the prosecuting officer should take matters into his own hands in the enforcement of your health laws. I believe a right enforcement of the health laws would bring about an education of a certain class of people who insist upon remaining ignorant. I further believe that the health officers of this state are trying to bring about the education of the people along these lines. I want to vouch for

Digitized by Google

our Laboratory of Hygiene in that respect. I think great things are being done there to enforce the law, and I want to emphasize the good work done by my friend Stone.

As Dr. Caverly has said, you, as health officers, have the power of the Czar of Russia. You have unlimited power to abate nuisances which are a detriment to the health of our people. You can go ahead and abate almost any nuisance which in your opinion and in the opinion of the board of health of your town is a detriment to the health of your community.

You stand as guardian of public health of your community. You are backed by laws which I believe are right and just to a large extent. I further believe, as the laws stand to-day, that the sentiment of the people is back of them, and that is the essential thing in the enforcement and carrying out of the law itself. This is nothing more or less than what we have been talking about—education.

There are some things that I have had called to my attention in reference to the laws of the state, and one which I wish to call your attention to particularly is the law relating to drainage and sewerage, also plumbing.

One thing I wish to say to you, and that is, I think the health officers of our state are not careful enough in the proper inspection of plumbing and drainage systems in their communities. I think more time and more care should be given the matter of plumbing; see that all new houses are properly connected and connections made in old houses when possible.

I have heard a lot said in my community with reference to the physician reporting cases of tuberculosis to the Board of Health. I believe that is a very serious matter and ought to be taken seriously. I suggest to every health officer, every physician here, that when you have a case of tuberculosis that you immediately report the same to the secretary of the State Board of Health, Dr. Holton. You certainly must see how important it is that that law which makes it obligatory that every case be reported be carried out to the very letter, so when there is a case of tuberculosis in a community everyone in that community may know it and guard himself accordingly. It is essential that every man, woman and child guard himself or herself against that great disease.

I have had three or four questions passed me and I will answer them to the best of my ability. I will give my off-hand opinion.

1. If a water company, through neglect, allows the water in the reservoir to become low and stagnant and cause sickness to the people using it, are they liable for damages?

I would say in answering this, if the local board of health performed their duty under the statute there would be no occasion for this question. But that does not answer the question.

The State Board may prohibit the use of water or ice from any source when in its opinion the same is so contaminated, unwholesome or impure

Digitized by Google

that the use thereof endangers the public health. And the court of chancery shall have jurisdiction and power, upon application therefor by the State Board of Health, to enforce by proper order and decree any order, rule or regulation which said Board may make under and by virtue of this section. This is Section 1 of Acts No. 115. If any of you have conditions of this kind in your community, I would advise you to act under that section. If you do not know how to get at it, go to your state's attorney and have him make an application to the court of chancery, which is open at all times. I am sure such a condition can be remedied. In my opinion, without carefully looking up the matter, if there was a contract existing between the water company and the patrons, the company would be liable for the damages.

2. Can the selectmen delegate to the health officer power to abate nuisances, etc?

The statutes create the health officer for the community, and a local board of health; therefore the duties that are laid down in the statutes cannot be delegated by the selectmen to any one man any more than I can delegate this man or that one to serve as state's attorney of Washington County. In some instances the local health officer has a moral right to lay his hands on some things before he consults any one. That is not lawful, perhaps, but I believe it is right. I believe the health officer should be a man of character and so keen that he can detect all causes which disturb the public health and at all times, regardless of any one else, suppress them. Perhaps that is not good advice for some of you, but I personally believe it just the same.

3. There is a railroad yard situated along an entire street of an incorporated village where from four to ten locomotives are kept night and day, switching at all times. The roundhouse was burned down several years ago. They use soft coal, and my question is, What can a town board of health do under the Vermont Statutes to abate the smoke nuisance?

The state of Vermont has not yet realized sufficiently congested conditions in any community to cause them to agitate what is known as a smoke nuisance.

If any statute applies to this, it is Section 5439, relating to the abatement of nuisances: "A local board of health shall have power and authority to abate nuisances affecting the public health." You doctors know better than I whether the smoke, noise and disturbance would come under that section. If there were any indications that poor health was attributed to the smoke in that community, I think it might be adjudged a nuisance and the abatement therefore enforced. I would advise the local board of health to appeal to the railroad commission and act with them. Possibly the railroad commission might have jurisdiction over the matter and order a new roundhouse built.

Digitized by Google

4. What do you say about a town where the selectmen neglect or refuse to meet and organize as a local board of health? What is their liability?

I think there is a section which provides a penalty for the neglect of the board of selectmen to organize as a local board of health. It is certainly a deplorable state of affairs when the board of selectmen of a town do not wish to get together and organize a local board of health. Of course in some communities the selectmen do not live near together; one might live five or ten miles from another; but it seems to me they could, if they wanted to perform their duties, get together and organize. They certainly could get together once a year so as to give the secretary the opportunity to report to the State Board of Health that they had organized.

Suppose there is no reason, no call for the meeting, what is the result?

Suppose there is nothing to call them together is the question. The effect of such a procedure on the entire state would be a thing of importance.

I want to say a word for a very dear friend of mine, and that is for Dr. Stone of the Laboratory of Hygiene. I believe this is the greatest institution we have in the whole state of Vermont. I think you all realize that health is the greatest asset any man, woman, or child can have. When we have an institution of this kind which I know aids the poor as well as the rich, aids you officers of health, I say, it is simply a wonderful institution. I believe something should be done to increase the appropriation. The Laboratory is getting a meagre sum of $10,000 a year for the performance of its duties. What is this sum compared to the good health of the state? I say, God hasten the day when we may have a building to put the apparatus in and money enough to run it. I do not think the people of this state realize what they have here. They have no idea what the officers of this institution are doing. Some of you physicians and health officers do, I know, but I am speaking of the mass of people. I have heard a great many speak of the excellent work done there and of the uniformly courteous treatment.

Dr. Holton.

Something was said about the non-organization of the local board of health.

The first duty named in the section is that the local board of health may abate nuisances. If they are not organized, there is no authority to do anything. Actions taken by the health officer alone are not legal and a serious question might come up in that respect. Some lawyer who is looking for business might question the constitutionality of those sections. The health officer should never go ahead and act on his own responsibility when it is otherwise provided by the statutes of the state.

In case the health officer, deputy health officer, town or city clerk are

Digitized by Google

out of town, would the first selectman have the right to grant a burial permit?

The law says the health officer shall issue the burial permit, or the deputy health officer, or in their absence, the town clerk. This is a statutory law and whatever the statutes say, must be carried out. There are times, of course, when it would be almost necessary to have some one else sign the death certificate. I think there is a chance to appoint a deputy health officer for that purpose alone. I presume the secretary of the State Board of Health could.

Dr. Holton, Brattleboro.

We had two cases where the two health officers died suddenly; there was no deputy. The town clerk died the same day as the health officer. There was no one in that town who could issue the permit. I telephoned and had them appoint a health officer and had him issue the permit. I telephoned to him that I was sending his appointment by that mail. I can only delegate the power of granting burial permits by the appointment of a health officer under whose jurisdiction this comes.

Who has the right to appoint a deputy health officer?

I think the statutes provide for that, Section 9, Act No. 113. I think the deputy health officer is appointed in the same manner as the health officer.

In case the selectmen do not organize to take any action regarding health matters, what are the duties of the health officer? Has he any power to call them together and ask them to organize? Is it his duty as the secretary and executive officer of the board to call the selectmen together and tell them their duties and ask them to organize that he may act?

I think it is the health officer's duty to call the board together and lay the matter before them and if they deem it proper for further investigation, they can take the matter up.

My question was, Could the health officer compel them to organize so as to be in a position to act? The health officer is powerless in the matter of abating nuisances, unless the entire local board gets together and acts. If they do not organize, who is he to look to for his authority?

If there is any neglect on the part of the board of selectmen, he should report the same to the state's attorney and perhaps he would be able to interest them to act, and if he fails, then you have the attorney general to go to.

In our community, our selectmen have a day and an hour at least once a month in which they meet to transact the business of the town and

Digitized by Google

other meetings as occasions arise. We have never really organized, but in cases where nuisances are to be abated, we have the papers made out and signed by the selectmen and the secretary or health officer. Whether that will stand strict construction when it comes to court, I would like to know, but we have done that sort of business for at least three years.

I should think that was all right if it was embodied in the order that it was the action of the entire board of health signed by the health officer.

We have the whole board sign it and then it is countersigned by me.

Then it is all right. If it is inserted in the order that it was the action of the entire board, signed by the secretary, it might be all right, too.

Can a health officer sign a death permit and leave it in his office for his clerk to fill out and have it legal?

I should say not.

If the health officer puts in the part which shows the cause of death and the things which he himself can only testify to, and only the clerical part left for his clerk, the name, age, etc., is that legal?

If you are acting upon one particular case, the health officer might do that. He might leave it to his assistant if he had one. If the health officer did sign the blank and leave it to be filled in by come one else, I do not think that would hold because it has been held by the courts that complaint blanks signed by the prosecuting officer and filled in by some one else are illegal.

Suppose a communicable disease exists in town; has the health officer of that town the authority to give a written permit for a person known to have this disease to go into another town?

Without looking the statute up, I should think a health officer had no such right.

I believe there is a section which says that no such person knowing himself to be infected with smallpox, or other infectious or contagious disease, dangerous to the public health, shall come into a town without the permission of the health officer of that town. If he does enter without your permission he shall on conviction pay a fine to the treasurer of the state.

I understood that section read: no one knowing himself to be infected could come into my town, even with my permission. Am I right?

Section 15 is the section referred to and it states very plainly.

W. L. Havens.

I think there are two steps. When we quarantine a patient in our own

Digitized by Google

town, he can not leave that town without my permission; neither can he go into another town without the permission of the health officer of that town.

M. P. Stanley.

In case of a public building—the Odd Fellows Hall—is not connected with the public sewer. You order the owner of that building to so connect. He says, "If you compel me to connect with the sewer, I will take everything out." This is the Odd Fellows Hall and is used three or four times a week. There is no vault and we ordered the owner to clean it out and connect with the general sewer. He said he would not and if I compelled him to connect, he said he would not let them have any closet at all. I wish to ask if he has the right to remove the closet in a building used by the public. Another building occupied by the Foresters had no water in the winter time. The owner complained of the freezing, so cut the water off. I wish to ask if he had the right to do so.

I should say it was almost absolutely necessary that these buildings be provided with running water and also water closets. This matter is within the jurisdiction of your local board of health; they should pass on it and if it is a nuisance, condemn it.

Dr. Dalton.

Here in this city we have a great many buildings that are not connected with the sewer on streets where there is a sewer; also, the people who own these buildings have no money to connect with the sewer if they are ordered to do so; there is no visible means of support and the only money they have is invested in these unconnected houses. The law says in such a case, the city or town shall make the connection and charge it up to the owner of the building. The street department does not think it is up to them to make any connections; they say they have no appropriation to do so. The health department says it has no appropriation to do so. I would like to know how to get those houses connected.

I cannot tell you.

Dr. Dalton.

Can it be collected the same as taxes?

No, because taxes are constitutional.

Dr. Dalton.

By whose authority can they be made to connect with the sewer?

That matter is within the hands of the Board of Health.

Digitized by Google

Very recently a neighboring physician was called to make out a death certificate for a small child who died about one week previous which he attended at the birth. He was asked to make out the death certificate and refused because he had not seen the child in sickness. The child was not known to be sick and died very suddenly. The question is, Should he not have ordered an autopsy to have found the cause of death? There are a very large number of children who die within the first ten days or two weeks. Is it necessary to have autopsies to obtain the cause of death, or should the health officer or physician in attendance at birth make out the certificate? I was called in to fill out a death certificate recently where a rather feeble infant at birth died without attendance. I did not see the child when it was sick. Dr. Holton wanted to know what was the cause of death. Is it necessary to have an autopsy in those cases?

Whenever a person dies without medical attendance, the head of the household where such death occurs, or the next of kin, shall immediately notify the health officer, if there be one, otherwise a member of the local board of health where such death occurred, who shall, after proper investigation, and if deemed necessary by him after an autopsy to determine the cause of death, issue a certificate of death. If there is the slightest suspicion of violence in connection with that death, it is your duty to at once notify the state's attorney. If he feels as though your grounds for suspicion are well founded, all he has got to do is to send for the dector at the Laboratory of Hygiene. I have sent for him several times and every time the work has been very satisfactory to the community where these deaths occurred. Where there are suspicious circumstances and the cause of death cannot be determined unless an autopsy is performed, by all means perform the autopsy, because Dr. Holton has said that he must have a cause of death on all certificates, and if you are not attending a person who has died suddenly without any suspicious circumstances, how are you going to perform your duty without an autopsy? When there are no suspicious circumstances and the cause of death can not be determined, by all means order an autopsy.

Dr. Elliott.

In case there is no suspicion of murder but there is a suspicion of criminal neglect, would the case stand in the same way?

In the same light. I do not believe in leaving one thing undone if it is possible to clear up a case.

Dr. C. F. Dalton.

I would like to know in case of a death which might possibly be suspicious, where the state's attorney refuses to get an order for the autopsy, has the health officer authority to do the autopsy or have the pathologist at

Digitized by Google

the Laboratory of Hygiene perform it without the order from the state's attorney?

Mr. Gates.

If your state's attorney will not order such an autopsy, then telephone to the attorney general and he will investigate the matter.

Dr. B. H. Stone.

I think Dr. Dalton's point is this: in a case in which there is no suspicion whatever, but where death occurs from unknown natural causes without doubt, and which is, for that reason, outside the jurisdiction of the state's attorney, does the health officer, so as to satisfy his own mind, and to get a cause of death to put on the death certificate, have the right, against the wishes of the family, to insist on having an autopsy?

Mr. Gates.

There is no law covering that point, Doctor.

Dr. Dalton.

What would be put down? Shall I have to guess at the cause?

Mr. Gates.

The local board of health has the right to have an autopsy performed.

Dr. Stone.

The health officer lays himself in no way liable.

Dr. W. L. Havens.

I want to tell you of a little experience I had. I have always questioned how to insert the name in the birth certificate in case of an illegitimate child. The question comes up in Brattleboro; Mary Smith gives birth to a child. It is recorded. Perhaps she says John Jones is the father of her child. She names the child John Smith Jones. The question which comes up is, Should the father named by her be placed in the birth certificate? My experience is when you are putting in the name of the child, do not put in the name of the man who she says is the father of her child.

I got word that there was a dead body in the Connecticut river. This party had drowned thirteen days before. The body was located on our side of the river. What should I do in that case?

Mr. Gates.

Any suspicious circumstances?

Digitized by Google

No, the father came to me with the sexton from Bellows Falls. The young man went in swimming and was drowned. The body was in a very bad condition.

Mr. Gates.

I should report on my death certificate as cause of death drowning.

Dr. W. L. Havens.

If you did that, you would hear from Dr. Holton.

I asked the sexton from Bellows Falls to ask Dr. Allbee to fill out the certificate. He telephoned me that Dr. Allbee said I must do it. I filled out the certificate and gave the order for the removal.

Mr. Gates.

The cause of death was by drowning; state whether accidental or suicidal.

I went and looked at that body and was perfectly satisfied that it was accidental, and so stated on my certificate.

Mr. Gates.

Every man has to take what he finds. If there should be any change made after finding the body and prior to autopsy, such change should be noted for future reference.

Dr. Elliott.

I would like to ask the attorney what the powers and duties of the health officer are when he has a family under modified quarantine.

Mr. Gates.

That matter is thoroughly covered by rules and regulations of the State Board of Health, and Dr. Holton can tell you better than I.

Dr. Elliott.

I know what Dr. Holton's decision is, but I wanted to know what you thought of the matter.

Mr. Gates.

I do not know what Dr. Holton's decision is, but this is what I think of the matter. The State of Vermont has established a State Board of Health with power to promulgate rules and regulations, and Section 5454 states that a physician who knows or suspects that a person whom he has been called to attend is sick or has died of a communicable disease

Digitized by Google

dangerous to the public health shall immediately quarantine and report to the health officer the place where such case exists, and the name, degree of virulence and cause or source of the disease and such other facts relating thereto as may be necessary for the health officer to make examination and act in the premises.

Mr. Lake.

The State Board of Health makes the rules and regulations for us to follow out and I have explicit confidence in every rule which Dr. Holton makes, and I have great faith in his judgment and so that is all I want. I am satisfied with Dr. Holton's decision and don't need to ask anybody's else.

Dr. G. B. Hulburd, Jericho.

What I have to say will be very brief for I know you all want to be in time for your train and the hour is getting late. I wish to say that this is one of the best meetings I have ever attended. We have always had good attendance and good papers before, but I think this meeting goes a little ahead of anything we have ever had.

What I wish to emphasize is what has been brought up at these meetings each year. We must educate the people before we can expect to accomplish very gratifying results. Each one of us is sent here by our towns to be educated; we in turn should go home and try, in our way, to educate the people along the same lines. My idea of educating the people is this. Insert some little article in your daily or weekly paper which bears upon a certain subject; such as the duties of the health officer, not forgetting to include the penalty if he does not discharge his duty. This enlightens the people with whom you have to deal and they will know what your duty is and what treatment they must expect at your hands. We have our different state's attorneys to whom we can apply when in doubt, and we should consult them whenever we are not positive regarding our duty. We have the laws regarding modified and strict quarantine. These laws would make an interesting item in your paper and one which would benefit you. If we find there is an epidemic in an adjoining town, we should never fail to do our duty and keep a close watch. My people understand thoroughly that I am health officer of my town and that I am to be notified in every case, whether the quarantine is to be modified or strict. I mean to do my duty and they, I believe, understand that I am simply trying to do what the law compels me to do. I had notice a few days ago that there was a case of chicken-pox in a certain locality. I went to the see the case. I found the patient sicker than she should be with chicken pox. I said to the head of the family: "This is a very sick patient. We must put her in strict quarantine and watch developments for a certain length of time." The patient did not have the marked eruptive showing of chicken-pox. The

Digitized by Google

next day I pronounced it cerebro-spinal meningitis. Thus coöperation between the head of the family and the health officer may have prevented a serious epidemic. The results obtained by carefully watching and quarantining suspicious cases, are manifold. I am deeply indebted to the State Laboratory and can not express my gratitude to Dr. Stone and his assistants for their many courtesies extended to me, for their carefulness in the examination of specimens submitted by me and for the prompt reports which I have been able to obtain from the Laboratory.

Hon. A. A. Butterfield, Jacksonville.

When I look out upon this beautiful state, whose scenery is grander than any other part of the world, and especially here at Burlington, I ask myself, What is the necessity of any health laws anyway? But we find there are health laws, and the Legislature is meeting once in every two years, and the Supreme Court five times in one year, to tell us what the laws ought to be and what the laws are. The criminal laws are made not so much for the benefit of the criminal as for the defense of the good citizen. The health laws are made not so much for the person afflicted as for the protecton of the community. In other words, the public places, such as churches and schools, are for the well and not for the sick. They are for those persons who will not poison their neighbors by giving diseases to them. This subject has been very thoroughly discussed to-day and, as I understand, yesterday, and I have no doubt that this subject has been discussed at other meetings of this honorable body. Consequently I am placed in a very embarrassing position.

I might take up the subject of tuberculosis. So far as my experience goes, physicians do not do their duty, do not do what they should under the special act, as to returns of cases of tuberculosis. Neither do they do their duty to health officers nor to the State Board of Health. There are a great many cases of tuberculosis in the state of Vermont, and every little while a death certificates indicates that the patient died from tuberculosis. There has been no record of that case until death occurred. Why hasn't that case been reported? Some one has neglected his duty. A health officer is not a prosecuting officer. It is his duty to do certain things and it is his duty to notify a prosecuting officer in certain cases, and there are a good many such cases of neglect where the prosecuting officer should be called in. I understand that it has been said here, yesterday, that health officers alone have no authority in themselves to do certain things. It seems to me that if the law permits the State Board of Health to promulgate rules and regulations for the instruction of health officers and they are in accordance with the laws of the state, and they are to be punished by a fine of $100 if disobeyed, the health officer must necessarily have some power vested in him. I suppose some people with more will than wisdom will refuse to obey the laws governing the quarantine regulations. There will be a prosecution and then the courts will say whether the State Board

Digitized by Google

of Health have exceeded their authority, and whether the health officer has exceeded his authority in following out the rules and regulations laid down by the State Board of Health. At such a time, the court will tell us what the law really is. Let the courts place the ruling so that we will all know what the laws really are. Only in this way can we know whether health officers have such and such authority and whether they are exceeding such authority if they venture to perform the duties laid down for them by higher officials.

A question was raised regarding a physician's right or even privilege of signing a death certificate where he has not attended such a patient during the lifetime. The death certificate in such a case, according to my interpretation, must be made out by the health officer, and he must do his duty to the full extent of the law.

The present rule regarding modified quarantine is not strong enough. It may keep certain persons away from the public, but the question arises in my mind, Does it keep the public away from the danger? I am health officer of my town and I am town clerk, and I am not at home because I am ordered here to attend these meetings. My daughter is my assistant and I say to her when I start away from home, "You know about the making out of these blanks, these certificates?" "Yes," she says. "Now, if a death certificate comes to you (now, gentlemen, I may be wrong in this) and they want a burial certificate, do not sign it as health officer; you sign my name to the burial certificate as town clerk." I don't know what the Supreme Court will say about it if they ever find it out, but that is my practice. The health officer was out of town and could not act; the town clerk was out of town, but his clerk was authorized to do those things for him, although she is not deputy town clerk.

In the abatement of nuisances we have a large power, but we have no law which allows a health officer to act alone. The local board of health has to adjudge what is a nuisance and order the health officer to abate the same. Then, gentlemen, it is the duty and obligation of the health officer to see that such a nuisance is abated.

The time is late and we are at the end of the meeting and I will not detain you longer.

I thank you for the attention you have given me.

Digitized by Google

PRACTICAL PHASES OF LABORATORY WORK.

DR. C. F. DALTON, BURLINGTON, VT.

I have envied you gentlement during the last four days as you have been up here on a sort of vacation, while I have been doing my regular routine work, and it has been a very busy time. Just to show you what Burlington can turn out in the line of health officer's duties, we have had five sudden deaths during the last four days. Burlington is getting to be quite metropolitan.

At the beginning of this discussion I think it is my privilege and my duty to again voice the sentiments expressed by State's Attorney Gates in regard to the men who constitute the Laboratory staff. I believe that the most practical phase of the Laboratory of Hygiene is the character of the men who work there and I want to say to you, gentlemen, that possibly I, more than any one else, appreciate the uniform courtesy extended by every member of that staff. And I am sure the more you come in contact with Dr. Stone and his assistants, the more you will appreciate what I have said.

We have more diphtheria here in Burlington than anywhere else in the state. So far this year we have had sixty cases; it seems to be endemic, but by constant vigilance we hope we are getting it under better control. I believe we should insist on having two consecutive negative cultures before the release of a case of diphtheria. I have talked this matter over very thoroughly with the physicians in my locality, and also with the families, and have told them plainly the reasons for asking for two such negative cultures. Sometimes I have had quite a bit of dispute with the physicians on the subject, but it had been demonstrated at the Laboratory that a positive culture quite frequently follows one negative culture, so it is plain that we should allow two, or better still, three days' interval before the second negative culture is taken. The length of time the bacilli are found in the throat varies. Dr. Stone tells me that the time average in a long series of cases at the Laboratory is fourteen days, that is from the date of the first positive culture. In the March number of *Progressive Medicine* several series of cases are reported in which the time ranges from eight to fifty-two days.

I have attended these health officers' meetings for the last two or three years unofficially and have failed to ever hear a paper upon the subject of fumigation. I wish we might have instruction on this subject. Personally I use permanganate and formaldehyde. I should not feel safe in using candles. I find also that the solutions of formaldehyde vary greatly in strength. At the present time I have some formaldehyde which I think registers up to 40 per cent, but I have used formaldehyde which I am quite

Digitized by Google

positive did not come up to that mark. I wish it might be possible for the Laboratory of Hygiene to examine the different fumigators and disinfectants and tells us what are the best to use; tell us whether the candles are effective and tell us whether the formaldehyde grades up to the 40 per cent or not.

CLOSING DISCUSSION.

Dr. B. H. Stone.

I think it really makes very little difference what form of formaldehyde you use. The manner in which you generate the gas is only a matter of expense and convenience. If you want to pay a little more for some method that is a little more convenient to handle, you probably will get about the same results. From the small amount of work which we have done along the line of disinfectants, I feel that it is not safe to use less than a pint of 40 per cent formaldehyde or its equivalent for 1000 cubic feet of space.

Dr. Dalton spoke about asking the Laboratory to make tests of standard formaldehyde solutions. I wish to say that is strictly within our duty under the Pure Food and Drug Law to make these tests whenever application is made. Any preparation sold for any prescribed standard of strength must be that strength, and it is our duty to examine specimens submitted at any and all times. If a solution is sold for 40 per cent formaldehyde solution, it is our duty to examine the same whenever we are asked so to do. You should send it in a sealed bottle so that no one can tamper with it while it is in transit.

Dr. H. D. Holton.

Do you know anything at all about how the candles stand?

Dr. H. B. Stone.

The required number as stated on the label is usually not sufficient. In most of these cases we have had to use two or three times the number of candles which they claim will do the work, to do it. If you use candles, you should know the amount of formaldehyde in each and you should use a number equivalent to sixteen ounces of the 40 per cent solution.

They have a statement of the fact that we tried a certain number of candles in a room of a certain size with certain results. I do not remember in this particular case whether or not the number of candles required was the number of candles which they claim will do the work. My impression is that we used double the number which they recommended. Any results which we have ever published have stated the facts that so many candles have been used in such a sized room and the results were so and so. Any facts which we have ever submitted or published are reliable.

Digitized by Google

SPECIMENS EXAMINED AT THE LABORATORY OF HYGIENE FOR THE QUARTER SEPTEMBER 1, 1908, TO JANUARY 1, 1909.

WATER.

Ground waters:		
Normal	81	
Present pollution	33	
Past pollution	63	
Past and present pollution	99	
Surface waters:		
Normal	36	
Polluted	40	
Total		352

SPUTUM FOR TUBERCLE BACILLI.

Male:		
Positive	69	
Negative	185	
Female:		
Positive	52	
Negative	149	
Sex not stated:		
Positive	3	
Negative	19	
Total		477

CULTURES FOR DIPHTHERIA BACILLI.

Positive	438	
Negative	1131	
Suspicious	17	
Total		1586

Of 210 cases of diphtheria, 164 were released properly and 56 were not released with negative cultures.

BLOOD FOR TYPHOID BACILLI.

Positive	105	
Negative	241	
Total		346

Digitized by Google

BLOOD FOR MALARIAL EXAMINATION.

Positive		
Negative	6	
Total		6
Miscellaneous examinations		116
Total number of examinations made		2883

Digitized by Google

STATE LABORATORY STATISTICS.

Milk Below Standard

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
61266	8-25-08	T. P. Mangan	Rutland	10.75 by lactometer	8.2	2.5	Refractometer 37.8	Solids by weight 10.60. Watered
61764	9-10-08	Thomas Ryan	Burlington	10.25 by weight	5.95	4.3	" 39.0	Contains added water
61832	9-12-08	Geo. Pirmis	Barre	14.1	9.0	5.1	Dirty	
61829	"	H. L. Nixon.	"	12.8	8.2	4.6	"	
62328	9-25-08	Benj. Hinman	Newport	10.2	7.0	3.2	Refractometer 36.3	Ash .43. Watered
62447	9-29-08	O. O. Estes	Bristol	11.86	7.26	4.6	" 35.3	" " "
62584	10- 1-08	Joe Pocquett	Enosburg Falls	14.1	9.0	5.0	Dirty	
63308	10-27-08	B. Hier	Proctor				"	
63318	"	J. B. Turner	"				"	
63556	11- 4-08	C. Ladabouche	"				"	
63560	"	B. Hier	"				"	
63562	"	J. Kraus	"				"	
64370	12- 1-08	W. C. Hoag	Burlington	13.7	9.7	4.0	"	
64407	"	Jerry O'Brien	"	13.5	9.3	4.2	"	
64414	"	E. C. Bordo	"	12.4	9.15	3.25	"	
64416	"	Baker & Tupper	"	13.5	8.9	4.6	"	
64921	12-14-08	B. L. Bump	Clarendon	7.66	4.86	2.8	Refractometer 28.5. Dirty	Ash .38 %. Watered
64980	12-16-08	Fred Tucker	Ludlow	Top sample—	unmixed	10+	Dirty	
64982	"	L. J. Miner	"	13.5	9.0	4.5	"	
65090	12-19-08	Salime LaPierre	Chester	9.13	6.13	3.0	Refractometer 31.5. Dirty	" .48. "
65091	"	A. W. Chadbourne.	Weston	11.10	8.30	2.8	" 38.3. "	" .67 "

Digitized by Google

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically		Remarks
61463	9- 1-08	H. A. Bixby	Burlington	13.16	8.6	4 5	Normal.	Clean	
61464	"	Steele & Butler	"	12.33	8.7	3.6	"	"	
61465	"	Mrs. Peter Bushey	"	13.18	8.8	4.3	"	"	
61466	"	Jerry O'Brien	"	12.1	8.7	3.4	"	"	
61467	"	P. X. Saltus	"	12.1	8.5	3.6	"	"	
61468	"	Thos. Ryan	"	13.3	8.9	4.4	"	"	
61469	"	Wm. Suckstorff	"	13.0	8.8	4.2	"	"	
61470	"	H. B. Chittenden	"	13.0	8.8	4.2	"	"	
61471	"	C. C. Bliss	"	12.1	8.7	3.4	"	"	
61472	"	J. E. Maynard	"	12.6	9.0	3.6	"	"	
61473	"	H. H. Wheeler	"	13.0	8.8	4.2	"	"	
61474	"	J. G. G. Downing	"	12.8	8.8	4.0	"	"	(Night)
61475	"	I. E. Chase	"	12.1	8.9	3.4	"	"	
61476	"	D. J. Millham	"	13.3	9.1	4.2	"	"	
61477	"	L. E. Haynes	"	13.8	9.0	4.8	"	"	
61478	"	O. E. Barber	"	11.97	8.72	3.25	"	"	
61479	"	J. G. G. Downing	"	13.1	8.9	4.2	"	"	(Morning)
61480	"	W. C. Hoag	"	12.1	8.7	3.4	"	"	
61482	"	C. W. Tyler	"	12.1	8.5	3.6	"	"	
61483	"	River View Farm	"	12.0	8.5	3.5	"	"	
61484	"	D. E. Wright	"	13.6	9.2	4.4	"	"	
61485	"	E. J. Viens	"	13.4	8.9	4.5	"	"	
61486	"	Geo. Saiger	"	12.6	8.8	3.8	"	"	
61487	"	T. P. Welch	"	12.6	9.0	3.6	"	"	
61488	"	J. B. Ritchie	"	13.2	8.9	4.3	"	"	
61489	"	E. C. Bordo	"	12.7	9.0	3.7	"	"	
61490	"	Bostwick Bros.	"	14.0	9.5	4.5	"	"	
61526	9- 2-08	D. L. Childs	Bethel	16.4	10.8	5.6	"	"	
61517	"	Geo. Wight	"	12.0	8.5	3.5	"	"	
61519	"	R. W. Morse	"	13.5	9.1	4.4	"	"	
61521	"	E. I. Colton	"	12.32	8.5	3.8	"	"	
61524	"	H G. Barnes	"	11.91	8.66	3.25	"	"	
61523	"	W. A. Durham	"			14.0	"	"	Top sample
61520	"	T. A. Graham	"	12.6	9.3	3.25	"	"	
61522	"	O. P. Northrup	"	13.0	9.7	3.25	"	"	
61525	"	A. Abbott	"	14.0	9.6	4.4	"	"	
61518	"	Fred Whitney	"	13.4	9.8	3.6	"	"	
61652	9- 8-08	Baker & Tupper	Burlington	13.3	9.1	4.2	"	"	
61616	9- 6-08	I. H. Buck	"	13.00	8.8	4.2	"	"	
61741	9-10-08	Wm. Suckstorff	"	12.8	8.8	4.0	"	"	

Digitized by Google

Milk—Standard or Above (Continued)

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically		Remarks
61742	9-10-08	Baker & Tupper	Burlington	12.2	8.5	3.7	Normal.	Clean	
61743	"	I. E Chase	"	12.0	8.5	3.5	"	"	
61744	"	C. K. Tyler	"	12.1	8.5	3.6	"	"	
61745	"	Mrs. F. X. Saltus	"	13.3	8.7	4.6	"	"	
61746	"	E. J. Viens	"	13.3	8.7	4.6	"	"	
61747	"	Mrs. Peter Bushey	"	13.8	9.0	4.8	"	"	
61748	"	F. L Murray	"	13.1	9.1	4.0	"	"	
61749	"	W. C. Hoag	"	12.3	8.5	3.8	"	"	
61750	"	C. C. Bliss	"	12.8	9.2	3.6	"	"	
61751	"	H. H. Wheeler	"	12.3	8.9	3.4	"	"	
61752	"	H. B. Chittenden	"	13.0	8.8	4.2	"	"	
61753	"	A. Moscowitz	"	12.4	8.5	3.9	"	"	
61754	"	L. E. Haynes	"	13.6	9.2	4.4	"	"	
61755	"	Steele & Butler	"	13.1	8.9	4.2	"	"	
61756	"	River View Farm	"	12.3	8.5	3.8	"	"	
61757	"	D. J. Millham	"	12.6	9.0	3.6	"	"	
61758	"	H. A. Bixby	"	12.8	8.6	4.2	"	"	
61759	"	E. O. Reynolds	"	12.1	8.7	3.4	"	"	
61760	"	J. Troville	"	12.6	8.8	3.8	"	"	
61761	"	I. H. Buck	"	12.8	8.8	4.0	"	"	
61762	"	J. B. Benedict	"	13.1	8.9	4.2	"	"	
61763	"	J Roland	"	13.1	9.0	4.0	"	"	
61765	"	J. B. Ritchie	"	13.3	9.1	4.2	"	"	
61766	"	Bostwick Bros.	"	13.3	9.3	4.0	"	"	
61767	"	Geo. Saiger	"	13.1	9.1	4.0	"	"	
61768	"	E. C. Bordo	"	13.0	9.0	4.0	"	"	
61769	"	J. G G. Downing	"	13.3	8.9	4.4	"	"	
61770	"	T. P. Welsh	"	12.8	8.8	4.0	"	"	
61771	"	D. E. Wright	"	11.9	8.5	3.4	"	"	
61772	"	O. E. Barber	"	13.0	9.3	3.7	"	"	
61716	9- 9-08	Herbert Pitcher, Comeata Lunch	"	13.3	9.0	4.0	"	"	
61717	"	Pappas, Poulous & Co., Boston	"	13.0	8.8	4.2	"	"	
61895	9-12-08	Lam Mikkelson	Barre	12.4	9.1	3.25	"	"	
61896	"	Geo. Persons	"	12.1	8.7	3.4	"	"	
61897	"	Morrison Farm	"			7.	"	"	Top milk
61898	"	Fred Bellville	"	13.8	8.6	5.2	"	"	
61880	9-12-08	H. Breg	"	12.1	8.5	3.6	"	"	
61881	"	Geo. Wales	"	13.1	8.9	4.2	"	"	
61883	"	H. H. Pratt	"	11.9	8.5	3.4	"	"	
61884	"	C. E. Perrin	"	13.8	9.4	4.4	"	"	

Digitized by Google

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically		Remarks
61835	9-19-08	J. Murry	Barre	13.5	8.9	4.6	Normal.	Clean	
61836	"	M. L. Town	"	13.6	9.2	4.4	"	"	
61792	9-11-08	T. Ryan	Burlington	13.0	8.6	4.4	"	"	Richardson's milk
61793	"	"	"	13.3	8.9	4.4	"	"	I. E Chase's "
61818	9-12-08	F. L. Davis	"	12.6	8.6	4.0	"	"	(Morning)
61819	"	"	"	12.3	8.7	3.6	"	"	(Night)
61820	"	P. D. Mills	"	12.5	9.3	3.25	"	"	
61821	"	Thos. Ryan	"	13.2	8.9	4.3	"	"	
61822	"	John McKenzie	"	13.3	8.5	4.8	"	"	
61823	"	Thos. Ryan	"	13.5	8.9	4.6	"	"	
61824	"	"	"	13.5	8.7	4.8	"	"	
61797	9-11-08	T. P. Mangan	Rutland	12.0	8.5	3.5	Refractometer 40.2		
62016	9-17-08	E. Myatt	Proctor	12.5	8.7	3.8	Normal.	Clean	
62017	"	J. Kraus	"	13.2	8.8	4.4	"	"	
62018	"	W. Fox	"	12.7	9.1	3.6	"	"	
62019	"	J. B. Turner	"	13.4	8.8	4.6	"	"	
62020	"	R. C. Mead Estate	"	12.9	8.9	4.0	"	"	
62021	"	N. Spear	"	14.4	9.4	5.0	"	"	
62022	"	J. Stone	"	13.7	9.3	4.4	"	"	
62023	"	B Hier	"	13.6	9.3	4.3	"	"	
62024	"	R. J. Bruce	"	13.1	9.0	4.1	"	"	
62025	"	C. Ladabouche	"	13.1	9.0	4.1	"	"	
62026	"	F. Russell	"	13.5	9.3	4.2	"	"	
62050	9-18-08	Keefe Bros	Waterbury	13.1	8.8	4.3	"	"	
62270	9-24-08	Montpelier Cream'y, Heaton Farm	Montpelier	11.8	8.6	3.25	"	"	Passable, but contains some sediment
62271	"	" " Pembroke Farm	"	12.3	8.6	3.7	"	"	
62272	"	H. Lombard	"	13.2	9.0	4.2	"	"	
62273	"	J. Coats	"	13.0	9.2	3.8	"	"	
62274	"	R. Brunell	"	13.0	9.2	3.8	"	"	
62275	"	W. C. Walker	"	13.2	9.4	3.8	"	"	
62276	"	A. E. Niles	"	13.2	9.0	4.2	"	"	
62277	"	J. Coulon	"	12.6	9.35	3.25	"	"	
62278	"	D. F. Sallies	"	12.1	8.6	3.5	"	"	
62279	"	T. R. Lawrence	"	12.6	9.1	3.5	"	"	
62280	"	N. N. Harris	"	13.6	9.1	4.5	"	"	
62281	"	F. K. Hayden	"	13.7	9.1	4.6	"	"	
62282	"	Geo. Campbell	"	14.1	9.1	5.0	"	"	Probably top sample
62283	"	Montpelier Creamery, W D. Hill	"	12.1	8.9	3.25	"	"	Badly soured
62284	"	A. E. Niles, Bailey Farm	"	12.7	9.1	3.6	"	"	
62286	"	Montpelier Creamery, Leland Farm	"	13.0	9.2	3.8	"	"	

Digitized by Google

Milk—Standard or Above (Continued)

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically		Remarks
62327	9-24-08	W. G Carley	Montpelier	13.6	9.4	4.2	Normal.	Clean	
62325	9-25-08	F. F Holbrook	Newport	13.5	9.1	4.4	"	"	
62326	"	F. C. Wilson	"	12.9	8.9	4.0	"	"	
62327	"	W. J. Scott	"	13.5	9.1	4.4	"	"	
62329	"	E. C. Blanchard	"	13.9	9.5	4.4	"	"	
62330	"	" Miles Farm	"	14.4	9.6	4.8	"	"	
62331	"	N. D. Foster, Herrick Farm	"	12.8	9.0	3.8	"	"	
62332	"	" Richmond Farm	"	12.4	9.0	3.3	"	"	
62353	"	Jonthon & Towle	Enosburg Falls	13.3	9.0	4.0	"	"	
62355	"	Fred Brown	"	13.5	8.5	5.0	"	"	
62356	"	Ed. Wallace	"	13.8	9.6	4.2	"	"	
62357	"	G. H. Kenfield	"	13.4	9.6	3.8	"	"	
62358	"	Paul Garrow	"	13.1	9.5	3.6	"	"	
62359	"	Ed. Libby	"	13.6	9.2	4.4	"	"	
62360	"	C. E. Kendall	"	13.1	9.1	4.0	"	"	
62361	"	Clayton Burt	"	16.2	9.6	6.6	"	"	Probably top sample
62362	"	Andrew Porter	"	14.6	9.4	5.2	"	"	
62363	"	John Fish	"	13.3	8.5	3.8	"	"	
62364	"	C. H. Abell	"	13.6	9.6	4.0	"	"	
62523	10-1-08	Frank Lafountain	"	13.1	8.6	3.35	"	"	
62525	"	Jack O'Brien	"	14.8	9.5	5.3	"	"	
62526	"	Joe Drew	"	14.5	9.3	5.2	"	"	
62527	"	Steven Billods	"	15.1	9.7	5.4	"	"	
62528	"	Tom Comstock	"			7.0	"	"	Top sample, unmixed
62529	"	M. Murphy	"	14.2	8.8	5.4	"	"	
62530	"	N. P. Maynard	"	14.4	8.8	5.6	"	"	
62531	"	A. Garrow	"	14.9	9.5	5.4	"	"	
62532	"	H. H Budd	"	13.9	8.7	5.2	"	"	
62533	"	Chas. Laflame	"	13.7	9.1	4.6	"	"	
62534	"	Joe. Richamboult	"	13.4	9.0	4.4	"	"	
62649	10-6-08	Canty	Rutland	12.20	8.95	3.25	Refractometer 40.2		
62658	10-7-08	C. B. Simonds	Hartford	12.7	8.7	4.0	Normal.	Clean	
62659	"	C. J. Empey	"	11.8	8.55	3.25	"	"	
62660	"	P. J. O'Connor	"			9.2	"	"	Top sample, unmixed
62661	"	E. B Newton	"			8.2	"	"	" " "
62662	"	W. H. Coutermarsh	"	13.9	9.3	4.6	"	"	
62663	"	David Mossey	"	14.1	8.7	5.4	"	"	
62664	"	Wilder Pierce	"	12.6	8.9	3.7	"	"	
62665	"	R. H Simonds	"	12.0	8.6	3.4	"	"	
62679	"	Henry Allen	Enosburg Falls	15.4	10.0	5.4	"	"	

Digitized by Google

Milk—Standard or Above (Continued)

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically		Remarks
62680	10- 7-08	J. A. Gibson & Son	Enosburg Falls.	13.8	9.5	4.3	Normal.	Clean	
62681	"	V. A. Jones	"	13.9	9.5	4.4	"	"	
62682	"	A. M. Aseltine	"	12.9	9.4	3.5	"	"	
62683	"	V. A. Irish	"	15.1	9.7	5.4	"	"	
62684	"	C. E. Kendall	"	15.4	9.8	5.6	"	"	
62685	"	David Benoit	"	14.4	9.6	4.8	"	"	
62686	"	Edd. Wallace	"	14.7	9.9	4.8	"	"	
62700	10- 8-08	W. C. Hoag	Burlington	13.4	9.0	4.4	"	"	
62701	"	Bostwick Bros	"	12.8	9.1	3.7	"	"	
62702	"	J. B. Ritchie	"	13.0	9.0	4.0	"	"	
62703	"	F. L. Murray	"	12.2	8.8	3.4	"	"	
62704	"	Baker & Tupper	"	13.4	9.0	4.4	"	"	
62705	"	C. K. Tyler	"	12.6	9.0	3.6	"	"	
62706	"	C. C. Bliss	"	12.2	8.5	3.7	"	"	
62707	"	F. X. Saltus	"	12.6	8.7	3.9	"	"	
62708	"	H. B. Chittenden	"	12.3	8.7	3.6	"	"	
62709	"	Jerry O'Brien	"	13.6	9.2	4.4	"	"	
62710	"	Wm. Suckstorff	"	12.6	8.8	3.8	"	"	
62711	"	Thos. Ryan	"	13.2	8.8	4.4	"	"	
62712	"	H. H. Wheeler	"	12.9	9.3	3.6	"	"	
62713	"	E. C. Bordo	"	13.1	9.3	3.8	"	"	
62714	"	L. E. Haynes	"	13.3	9.3	4.0	"	"	
62715	"	Mrs. Peter Bushey	"	12.7	8.9	3.8	"	"	
62716	"	I. H. Buck	"	12.2	8.7	3.5	"	"	
62717	"	O. E. Barber	"	12.0	8.7	3.3	"	"	
62718	"	D. E. Wright	"	13.1	9.0	4.1	"	"	
62719	"	E. O. Reynolds	"	13.1	8.9	4.2	"	"	
62720	"	Steele & Butler	"	12.3	8.7	3.6	"	"	
62721	"	J. G G. Downing	"	13.0	9.2	3.8	"	"	
62722	"	T. P. Welch	"	13.7	9.0	4.7	"	"	
62723	"	E. J. Viens	"	13.4	9.0	4.4	"	"	
62724	"	River View Farm	"	12.8	8.8	4.0	"	"	
62725	"	D. J. Millham	"	12.8	8.8	4.0	"	"	
62728	"	I. E. Chase	"	13.0	8.9	4.1	"	"	
62729	"	J. Roland	"	12.7	8.9	3.8	"	"	
62730	"	John Benedict	"	12.7	9.0	3.7	"	"	
63307	10-27-08	R. J. Bruce	Proctor	12.7	8.5	4.2	"	"	
63309	"	C. Dodge	"	13.2	9.0	4.2	"	"	
63310	"	N. Spear	"	13.8	9.4	4.4	"	"	
63311	"	E. Myatt	"	12.8	8.8	4.0	"	"	

Digitized by Google

Milk—Standard or Above (Continued)

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically		Remarks
63312	10-27-08	J. Stone	Proctor	13.8	9.2	4.6	Normal.	Clean	
63313	"	J Kraus	"	13.7	9.2	4.5	"	"	
63314	"	T. V. Bates	"	13.9	9.1	4.8	"	"	
63315	"	R. C. Mead Estate	"	13.2	9.2	4.0	"	"	
63316	"	C Ladabouche	"	14.0	9.2	4.8	"	"	
63317	"	F. Russell	"	13.1	9.2	3.9	"	"	
63405	10-30-08	W. C. Hoag	Burlington			29.0	"	"	Cream
63441	10-31-08	—Keese	Middlebury	13.3	9.1	4.2	"	"	
63442	"	James Mack	"	13.2	9.2	4.0	"	"	
63443	"	Ernest Severence	"	14.8	8.6	6.2	"	"	Top sample
63554	11-4-08	N. Spear	Proctor	13.8	9.0	4.8	"	"	
63555	"	R. C. Meade Estate	"	13.8	9.6	4.2	"	"	
63557	"	R J. Bruce	"	13.2	9.2	4.0	"	"	
63558	"	E. Myatt	"	12.8	8.6	4.2	"	"	
63559	"	J. B. Turner	"	13.9	9.3	4.6	"	"	
63561	"	F. Russell	"	13.3	9.2	4.1	"	"	
63563	"	J. B. Turner	"	13.8	9.3	4.5	"	"	
63676	11-7-08	R. A. Warner	St. Albans	13.6	9.4	4.2	"	"	
63677	"	Z. W. Campbell	"	14.7	9.5	5.2	"	"	
63678	"	C. N. Bell	"	14.4	9.4	5.0	"	"	
63679	"	J. N. Warner	"	15.2	9.5	5.7	"	"	
63680	"	Ed. Ploof	"	13.7	9.5	4.2	"	"	
64367	12-1-08	I. H. Buck	Burlington	13.6	9.1	4.5	"	"	
64368	"	E. O. Reynolds	"	13.6	9.4	4.2	"	"	
64369	"	River View Farm	"	13.7	9.5	4.2	"	"	
64371	"	L. E. Haynes	"	13.9	9.6	4.3	"	"	
64372	"	C. K. Tyler	"	13.6	9.6	4.6	"	"	
64373	"	D. J. Millham	"	13.3	9.3	4.0	"	"	
64374	"	Geo. Saiger	"	13.6	9.4	4.2	"	"	
64375	"	H B. Chittenden	"	14.4	9.8	4.6	"	"	
64376	"	Steele & Butler	"	13.8	9.1	4.7	"	"	
64377	"	C. C. Bliss	"	13.5	9.3	4.2	"	"	
64378	"	H. H. Wheeler	"	13.3	9.3	4.0	"	"	
64402	"	I. E. Chase	"	13.3	9.1	4.2	"	"	
64403	"	F. L. Murray	"	13.0	9.2	3.8	"	"	
64404	"	Thos. Ryan	"	14.5	9.3	5.2	"	"	
64405	"	Wm. Suckstorff	"	13.7	9.3	4.4	"	"	
64406	"	J. G. G. Downing	"	13.7	9.7	4.0	"	"	
64408	"	Mrs. F. X. Saltus	"	13.9	9.4	4.5	"	"	
64409	"	Mrs. Peter Bushey	"	14.4	9.4	5.0	"	"	

Digitized by Google

Milk—Standard or Above (Continued)

Laboratory Number	Date	Dealer	Dealer	Total Solids	Solids Not Fat	Fat	Physically		Remarks
64410	12- 1-08	J. B. Ritchie	Burlington	13.7	9.3	4.4	Normal.	Clean	
64411	"	O E. Barber	"	13.0	9.2	3.8	"	"	
64412	"	Bostwick Bros.	"	14.0	9.7	4.3	"	"	
64413	"	T. P. Welch	"	13.9	9.6	4.3	"	"	
64415	"	J. Roland	"	15.1	9.5	5.6	"	"	
64417	"	John Benedict	"	12.7	9.1	3.6	"	"	
64418	"	H. A. Bixby	"	13.7	9.2	4.5	"	"	
64381	"	H. E. Smith	Northfield	14.3	9.3	5.0	"	"	Frank Morrill, producer
64383	"	"	"	14.0	9.6	4.4	"	"	A. Reed, "
64386	"	F. A. Joslyn	"	12.9	9.5	3.4	"	"	
64388	"	M. J. Clough	"	13.2	9.2	4.0	"	"	
64389	"	Walter Brown	"	13.8	9.6	4.2	"	"	W. H. Holton, producer
64392	"	"	"	13.8	9.5	4.3	"	"	A. W. Holton, "
64382	"	H. E. Smith	"	13.7	9.5	4.2	"	"	F. P. Houston, "
64384	"	"	"	13.6	9.6	4.0	"	"	C. F. Fowler, "
64385	"	"	"	13.3	9.5	3.8	"	"	F. P. Houston, "
64387	"	J. C. Hedges	"	14.0	8.8	5.2	"	"	
64390	"	Walter Brown	"	14.8	9.6	5.2	"	"	W. H. Holton, "
64391	"	"	"	14.3	9.7	4.6	"	"	J. C. Rice, "
64978	12 16-08	C. L. Douglas	Ludlow	13.3	9.5	3.8	"	"	
64979	"	W. C. Stearns	"	Top sample, unmixed		7+	"	"	
64963	"	C. S Jackson	"	12.8	9.1	3.7	"	"	
65018	1- 9-09	E. W. Gove	Hardwick	14.7	9.9	4.8	"	"	
65019	"	Geo. Cummings	"	14.0	9.8	4.2	"	"	
65461	12-28-08	B. L. Bump	Clarendon	13.3	9.2	4.1	"	"	
65092	12-19-08	E. E. Pease	Weston	12.39	9.89	3.4	"	"	Ash .73. Refractometer 40.3
65093	"	"	"	12.29	8.89	3.4	"	"	" .68. " 40.8

Digitized by Google

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
60003	7- 9-08	Old Grist Mill Malt Extract	Palmer & Torrence, St. Albans	Potter & Wrightington, Boston	..	..	1	Contains alcohol, and not so stated
61225	8-11-03	Port Wine	Submitted by C. F. Hastings, St Johnsbury		..	..	..	Not up to U. S. P. standard. Ordinary
61360	8-23-08	Lemon Extract	C. M Ferrin, Essex Junction	Junction Pharmacy	..	1	..	Lemon oil 3.7 per cent
61377	"	" " Burlington Brand	A. B. Yandow, "	Burlington Extract Co	..	1	..	Contains no lemon oil
61376	"	Thepure Lemon Extract	" "	McAndrews, Portland, Me	..	1	..	Low in lemon oil (4.5 per cent)
61379	"	Acme Lemon Extract	" "	Edwin J. Gillies, New York	1	..	..	Lemon oil 5.6 per cent
61378	"	Diamond Lemon Extract	" "	" "	1	..	..	" " 6.9 "
61374	"	Hartshorns Lemon Extract	" "	E. Hartshorn & Sons, Boston	1	..	..	" " 5.6 "
61361	"	Olive Oil	C. M. Ferrin, "	California Olive Growers Ass'n. Los Angeles	1	..	..	
61372	"	" " (Salad Oil)	W. S. Fletcher, "	E. Loubon	..	1	..	Cottonseed oil. Sold as olive oil
61380	"	" "	A. B. Yandow, "	W. B. Nichols, Dinuba, Cal.	1	..	..	
61775	9-10-08	Milk	Submitted by Boston White Cross Milk Co., Richmond	"Farmer No. 1"	..	..	..	Fat 4.4 per cent
61776	"	"	Submitted by Boston White Cross Milk Co., Richmond	"Farmer No. 2"	..	..	..	" 3.0 "
61777	"	"	Submitted by Boston White Cross Milk Co., Richmond	"Farmer No. 3"	..	..	..	" 3.8 "
61858	9-13-08	Cream	Submitted by T. L. Tupper, East Fairfield		..	..	..	" 26.0 "
61371	8-23-08	Cream of Tartar	I. A. Gilbert, Essex Junction	Stickney & Poor	1	..	..	
61381	"	" " " Gold Star	A. B Yandow, "	Berry Hall Co., Burlington	1	..	..	
61382	"	" "	" "	A. Colburn Co., Philadelphia	1	..	..	
61373	"	Red Clover Mince Meat	W. S Fletcher, "	Spaulding Kimball Co., Burlington	1	..	..	
60926	8- 8-08	Strained Honey	N. A. Viall, Bennington	New England Maple Syrup Co., Boston	1	..	..	
62284	9-22-08	Milk	Submitted by M. C. Rowell, Randolph		1	..	..	Total solids 13.0. Solids not fat 9.4. Fat 3.6
61365	8-23-08	Raspberry Jelly	I. A. Gilbert, Essex Junction	Ayer Pres. Co., Ayer, Mass.	1	..	..	
61366	"	Currant Jelly	" "	" "	1	..	..	
61368	"	Champion Banana Extract	" "	C L. Cotton, Earlville, N. Y.	..	..	1	Synthetic flavor. Incorrectly labeled
61367	"	Champion Strawberry Extract	" "	" "	..	..	1	Synthetic flavor. Colored. Incorrectly labeled
61369	"	Rose Extract	" "	Saratoga Extract & Chem. Co., Saratoga Springs	..	..	1	Colored with coal tar dye

Digitized by Google

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
61875	8-28-08	Peach Extract	A. B. Yandow, Essex Junction	E. Hartshorn & Sons, Boston	1			
61888	"	Champion Pineapple Extract	" " "	N. Y. Extract Co., New York			1	Synthetic flavor. Label incorrect
62868	9-26-08	Cider	Submitted by A. S. Hayes, Burlington					No evidence of added water
62865	9-24-08	Milk	Bingham Marvin, Montpelier					Fat 7.0. Top sample. Analysis of no value
62854	9-25-08	"	P. M. Carpenter, Enosburg Falls					Fat 3.1. Gravity 1.037. Bottom sample. Analysis of no value
62865	9-26-08	"	Submitted by F. B. Martin, Barre		1			Solids 15.4. Fat 5.2. Ash .6. Refractometer 40.2. No evidence of added water
62821	9-25-08	Vinegar	Submitted by J. B. Foss, St. Albans					Acetic 1.19 gms. Solids 1.536 gms. Ash .225 gms. in 100 cc.
62822	"	"	Submitted by J. B. Foss, St. Albans					Acetic 3.93 gms. Solids 1.626 gms. Ash .216 gms. in 100 cc.
62575	10-3-08	Milk	Submitted by Ranson Slav, Randolph					Fat 3.6
62506	10-1-08	"	Submitted by L. H. Ross, Bennington		1			Fat 4.8. Solids 14.2. Solids not fat 9.4. No typhoid bacilli found
62656	10-7-08	"	Submitted by C. M. Brown, Wilmington		1			Fat 4.6. Solids 14.2. Solids not fat 9 6. Clean
62650	10-6-08	Linseed Oil	Submitted by H. R. Church, East Shoreham					No adulterations found. Conforms to U. S. P. standard
63246	10-25-08	Vinegar	Submitted by A. H. Rutter, Burlington			1		Acetic acid 1.8 gms. Solids 1.7 gms. Ash .25 gms. in 100 cc. Below standard
63287	10-27-08	Milk	Submitted by E. K. Smith, Randolph Center		1			Solids 13.65. Solids not fat 9.15. Fat 4.4. Ash .67. Lactometer 33.
62726	10-8-08	Cream	Submitted by J. G. G. Downing, Burlington		1			Butter fat 25.0 per cent
62727	"	"	Submitted by I. E Chase, Burlington		1			" " 42.0 "

Digitized by Google

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
62932	10-14-08	Milk	Submitted by Geo. Heath, West Derby			1		Solids 11.4. Solids not fat 8.2 Fat 3.2. Refractometer 39.5. Poor
63591	11- 2-08	"	Submitted by Dr. F. H. Carter, Plainfield		1			Solids 18 78. Solids not fat 10.78. Fat 8 0. Ash .824. Lactometer 34
63622	11- 6-08	"	Submitted by W. C. Hoag, Burlington		1			Solids 14.2. Solids not fat 9.5. Fat 4.7 per cent
63142	10-20-08	Nabob Brand Mince Meat	Submitted by Francis H. Leggett & Co., New York	Francis H. Leggett & Co., N. Y.	1			No boron compound detected
63143	"	" " " " "	Submitted by Francis H. Leggett & Co., New York	" "	1			" " " "
63144	"	" " " " "	Submitted by Francis H. Leggett & Co., New York	" "	1			" " " "
63754	11-11-08	Milk	Submitted by Dr. F. E. Clark, Burlington		1			Solids 17.2. Solids not fat 10.1. Fat 7.1. Bacteria 2100 per cc. No tubercle bacilli found
63327	10-27-08	Maple Sugar	Submitted by W. L Hicks, Berkshire			1		Adulterated. Below standard. Maple ash .36 per cent
62298	9-24-08	Lemon Extract	Submitted by Joseph Burnett Co., Boston	Joseph Burnett Co., Boston	1			Lemon oil 10 per cent. Quality excellent
63883	11-14-08	Milk	Submitted by Miss Coy, Burlington		1			Solids 13.1. Solids not fat 9.6. Fat 3.5 Lactometer 35.
62836	10-12-08	Old Mission Olive Oil	F. E. Perkins, Burlington		1			No adulteration detected
62837	"	Antoninis Italian Salad Oil	" "		1			" " "
62838	"	Crubro Sweet Pickles	" "	Cruikshank Bros., Pittsburg, Pa.	1			" " "
62849	"	Frigate Sardines	M. J. Lunderville, Burlington	Spaulding Kimball Co., Burlington	1			24 small smoked sardines of excellent quality in olive oil
62850	"	Hunter Sardines	" "	Spaulding Kimball Co., Burlington	1			7 medium sized fish of fair appearance in cottonseed oil
62851	"	Neptune Sardines	" "	Spaulding Kimball Co., Burlington	1			6 large solid fish of good appearance and flavor in cottonseed oil

Digitized by Google

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
62859	10-12-08	Blue Sea Tuna in Olive Oil	M. J. Lunderville, Burlington	Cal. Fish Co., Los Angeles, Cal.		1	1	Packed in cottonseed oil
62854	"	Barton Brand Olive Oil	" "	Spaulding Kimball Co., Burlington	1			No adulterations found
62855	"	Beaumarchand Olive Oil	" "	Spaulding Kimball Co., Burlington	1			" " "
62857	"	Beaumarchand Brand Olive Oil	Paul Kelley, Burlington		1			" " "
62858	"	Raes Sublime Lucca Oil	" "	Francis H. Leggett & Co., N. Y	1			" " "
62865	"	Cordon D'Argent Olive Oil	E J. Thomas, "	Martin L. Hall & Co., Boston	1			" " "
62868	"	Van Duzer's Lemon Extract	" "	Van Duzer Extract Co., N.Y.	1			Lemon oil 8.3 per cent
62869	"	Domestic Essence Peppermint	" "	Burlington Drug Co.	1			Oil of peppermint 8.2 per cent
62886	"	Almond Extract	F. E. Perkins, "	Joseph Burnett Co., Boston	1			No adulteration detected
62887	"	Orange Extract, Burnett's	" "	" "	1			Orange oil 8.8 per cent. Quality excellent
63065	10-19-08	Burlington Lemon Extract	Mrs D. Mausur, Burlington	Burlington Chemical Co.		1	1	Less than 1 per cent lemon oil. Colored with tropæolin
63069	"	Lemon Extract	Mrs F. X. Saltus, "	Kimball Bros., Enosburg Falls		1	1	Less than 1 per cent lemon oil
63076	"	" "	Geo. Saiger, "	Wyoming Mfg. Co., N. Y		1	1	No oil of lemon. Colored with dinitrocresol. Fictitious formula on label
63081	"	Burlington Brand Orange Extract	W C. Hoag, "	Burlington Chemical Co.		1	1	Orange oil 3 2 per cent
63083	"	Lemon Extract	J. Neary & Co., "	C. H. Eddy & Co., Brattleboro		1	1	Less than 1 per cent lemon oil
63085	"	Baker's Lemon Extract	" "	Baker Extract Co., Springfield, Mass		1	1	Lemon oil 3.8 per cent. Artificial color. Probably old stock
64089	11-19-08	Cream	Submitted by H. F. Gifford, Rochester					Butter fat 26.0 per cent
62841	10-12-08	Delabigne Sardines	F. E. Perkins, Burlington	J. P. Smith & Co, New York	1			
62842	"	Teissier Sardines in Oil	" "	Wm. Underwood & Co., N. Y.	1			Packed in cottonseed oil
62843	"	Penauros Boneless Sardines	" "	J. P. Smith & Co., New York	1			
62844	"	Jules Dupont Sardines	" "	" "	1			
62845	"	Parisiana Sardines	" "	" "	1			
64075	11-20-0	Milk	Submitted by Heaton Hospital, Montpelier					Total solids 13.3. Not fat 9.0. Fat 4.3. Leucocytes normal. No streptococci found.
64133	11-21-08	"	Submitted by O. N. Estes, Bristol					Total solids 13.2. Not fat 9.2 Fat 4.0. No tubercle bacilli found.
63084	10-19-08	Green Mountain Vanilla Extract	J. Neary & Co., Burlington	C. H. Eddy & Co., Brattleboro		1	1	Imitation. Colored with caramel

Digitized by Google

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
63061	10 19 08	Star Brand Vanilla Extract	Mrs. D. Mansur, Burlington	Burlington Chemical Co.	..	1	1	Imitation. Colored with caramel
63064	"	Vanilla Extract	Submitted by W. C. Hoag, Burlington		..	..	..	Poor quality. Shows effect of partial decomposition
62862	10 12 08	Lemon Extract bulk	E. J. Thomas, Burlington	Burlington Drug Co.	..	1	1	Lemon oil 3.6 per cent. (Standard 5 per cent)
63982	11 18 08	Burnett's Vanilla	F. E. Perkins, "		..	..	..	For comparative Marsh caramel test. Result, caramel absent
63058	10-19 08	Olive Oil	Mrs. P. Mazzoni, Burlington	P. Terrile, Boston, Mass.	1	..	..	No adulteration detected
62860	10-12 08	Premier Pure Strained Honey	Paul Kelley, Burlington	Francis H. Leggett & Co., N. Y	1	..	..	" " "
62859	"	Royal Scarlet Pure Jelly	" " "	R. C. Williams Co., New York	1	..	..	" " "
63079	10-19-08	Olive Oil	A. Mowscovitz, Burlington	Burlington Drug Co.,	1	..	..	" " " A low grade of oil
62866	10-12-08	Evaporated Cider	E. J. Thomas, Burlington	A. H. Graves, Waterbury	1	..	..	No adulteration detected
63067	10-19-08	Williams Gherkins	Mrs. F. X. Saltus, Burlington	Williams Bros. Co., Detroit	1	..	..	Contain alum and tumeric, but correctly labeled
63796	11-12-08	Cresco Flour	Submitted by Jones & Isham, Burlington	Farwell & Rhines Co., Watertown, N. Y.	..	..	..	Total carbohydrates 79.12. Proteids 12.08. Moisture 8.80. Not gluten flour
63797	"	Atlantic Gluten Meal	Submitted by Jones & Isham, Burlington	Cutler Co. No. Wilbraham, Mass.	..	..	..	Total carbohydrates 18.38. Proteids 76.66. Moisture 4.96. Conforms to standard for gluten flour
64718	12- 7-08	Milk	Submitted by Howard Ray, Burlington		..	..	..	Fat 3.8. Dirty. Top sample, unmixed
62856	10-12-08	Crosse & Blackwell Pale Malt Vinegar	Paul Kelley, Burlington	Crosse & Blackwell, London	1	..	..	Solids 2.8. Ash .302. Acetic acid 5.72 gms. in 100 cc. Alkalinity of ash=10.4 cc. n/10 Hcl
63846	"	Derby Brand Calves Tongues	F. E. Perkins, "	E. K. Pond Packing Co., Chicago	1	..	..	No preservative detected
63847	"	" " " Boneless Chicken	" "	" "	1	..	..	" " " True to name
63078	10-19-08	Oakdale Lemon and Citral	A. Mowscovitz, "	Standard Grocery Co., Boston	1	..	..	Not lemon extract, but correctly labeled
63086	"	Standard Vanilla Extract	J. Neary & Co., "	Burlington Drug Co.	1	..	..	No adulteration detected
63066	"	Cream of Tartar	Mrs F. X. Saltus, Burlington	Dwinell Wright Co., Boston	1	..	..	Pure
63079	"	" "	Geo. Saiger, Burlington	B. Fischer Co., New York	1	..	..	"

Digitized by Google

Foods (Continued)

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
64704	12- 7-08	Meat Scrap	Submitted by Harry Shaw, Burlington	Smith & Webster, Shelburne.	1			No preservative found
64918	12-14-08	Baker's Lemon Extract	Submitted by P. H. Corley, Burlington	Baker Extract Co., New York	1			Lemon oil 7.1 per cent
64896	12-13-08	Beef Flank	Submitted by Dr. H W. Barrows, Stowe					Below standard. Contains traumatic abscess
64954	12-15-08	Milk	Submitted by Louis Goldman, Burlington	A. Mowscovitz, Burlington	1			Total solids 16.0 per cent Solids not fat 9 6. Fat 6.4. Clean, normal milk
64943	"	"	Submitted by Joe Brosky, Burlington			1		Total solids 14.0. Solids not fat 9.2. Fat 5 7. Dirty bottle and milk
64976	12-16 08	"	Submitted by Joe Brosky, Burlington		1			Total solids 13 9. Solids not fat 9.5. Fat 4.4. Normal
64977	12-15-08	"	Submitted by W. C. Hoag, Burlington		1			Total solids 14.0. Solids not fat 9.5. Fat 4.5. Normal
65013	12-17-08	Meat from heifer	Submitted by B. E. Welch, Franklin					Bursitis. Increase in synovial fluid, from injury

Digitized by Google

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
61359	8-28-08	Spirits Camphor..	C M Ferrin, Essex Junction	Junction Pharmacy	1	..	..	Conforms to U. S. P. standard
61356	"	Laxacold Tablets	" "	New York and London Drug Co., New York	..	..	1	Each tablet contains 2 grains acetanilid. Not so stated
61357	"	Cicero Headache Wafers	" "	Prepared for Junction Pharmacy	1	..	..	Label in correct form
61362	"	Tincture Iodine	" "	Junction Pharmacy	1	..	..	Conforms to U. S. P. standard
61363	"	A. D. S Headache Wafers	Submitted by Junction Pharmacy, Essex Junction	" "	1	..	..	Each wafer contains about 4 grains acetanilid, as stated
61364	"	Red Lion Catarrh Cure	Submitted by Junction Pharmacy, Essex Junction	" "	..	..	..	No cocaine, morphine, or other alkaloids found
60914	8- 8-08	Witch Hazel	A. C. Lamarre, Bennington	C. L. Cotton Extract Co., Earlville, N. Y.	..	..	1	Contains alcohol, and not so stated
59955	7- 9-08	Tincture Nux Vomica	A. G. Smith, St. Albans	A. G. Smith	..	..	..	Sample insufficient for assay
60909	8- 8-08	Spirits Camphor	Quinlan's Bennington	Quinlan Pharmacy	1	..	..	U. S. P.
61358	8-28-08	Formalin	C. M Ferrin, Essex Junction		1	..	..	Formaldehyde 38.5 per cent
63068	10-19-0	Spirits Camphor	Mrs. F. X. Saltus, Burlington	Burlington Drug Co	1	..	..	Conforms to U. S. P. standard
6-077	"	Tincture Iodine	A. Mowscovitz, "	" "	1	..	..	" " " "
63071	"	Quick Stop Headache Powders	Geo. Saiger, "	Kimball Bros., Enosburg Falls	1	..	..	Correctly labeled Each powder contains 4 grains acetanilid
63063	"	Wild Cherry Cough Syrup	Mrs. D. Mansur "	Susan J. Lawrence Medicine Co., Burlington	..	..	1	Label not in proper form
63870	10-12-08	Roderic's Wild Cherry Cough Balsam	E. J. Thomas "	Roderic Extr. Co., Portland, Me.	..	..	1	Alcohol 5.6 per cent and not so stated. Misleading statements on label
63074	10-19-08	Elixir Paregoric, Hall's	Geo. Saiger "	Prepared at 86 Brown St., Portland, Me	1	..	..	Not U. S. P., but correctly labeled

Digitized by Google

CHANGES IN LIQUOR STANDARDS.

Attention is hereby called to changes made by the legislature of 1908 in the liquor standards in force under the various sections of chapter 219 of the Public Statutes relating to traffic in intoxicating liquors. The standard has been changed from that prescribed by the United States Pharmacopœia to standards adopted under the provisions of chapter 226, "Foods and Drugs." The following standards for spirituous and malt liquors adopted by the State Board of Health under the provisions of this act are given below.

All liquors which are not labeled in accordance with these standards are misbranded and illegal and subject to all the penalties for misbranded and adulterated goods prescribed under chapters 219 and 226.

Quart samples must be sent for analysis accompanied by the *complete label*, as it is only by comparing the analysis with the label that the legality or illegality of the product can be determined.

These changes went into effect February 1, 1909.

Under the authority of chapter 226 of the Public Statutes the following standards for spirituous liquors are hereby promulgated by the State Board of Health.

Standard for Spirituous Liquors.

1. *Distilled spirit* is the distillate obtained from a fermented mash of cereals, molasses, sugars, fruits or other fermentable substance, and contains all the volatile flavors, essential oils and other substances derived directly from the material used, and the high alcohols, ethers, acids and other volatile bodies congeneric with ethyl alcohol produced during fermentation, which are carried over at the ordinary temperature of distillation and the principal part of which is higher alcohols estimated as amylic.

2. *Alcohol, cologne spirit, neutral spirit, velvet spirit*, or *silent spirit*, is distilled spirit from which all, or practically all, of its constituents except ethyl alcohol and water are separated, and contains not less than 94.9 per cent (189.8 proof) by volume of ethyl alcohol.

3. *New whiskey* is the properly distilled spirit from the properly prepared and properly fermented mash of malted grain, or of grain the starch of which has been hydrolyzed by malt; it has an alcoholic strength corresponding to the excise laws of the various countries in which it is produced, and contains in 100 liters of proof spirit not less than 100 grams of the various substances other than ethyl alcohol derived from the grain from which it is made, and of those produced during fermentation, the principal part of which contains all the higher alcohols estimated as amylic.

4. *Whiskey, potable whiskey, straight whiskey*, is new whiskey which has been stored in wood not less than four years without any artificial heat save

Digitized by Google

that which may be imparted by warming the storehouse to the usual temperature, and contains in 100 liters of proof spirit not less than 200 grams of the substances found in new whiskey save as they are changed or eliminated by storage and of those produced as secondary bodies during aging; and, in addition thereto, the substances extracted from the casks in which it has been stored. It contains, when prepared for consumption as permitted by the regulations of the Bureau of Revenue, not less than 45 per cent by volume of ethyl alcohol, and, if no statement is made concerning its alcoholic strength, it contains not less than 50 per cent of ethyl alcohol by volume, as prescribed by law.

5. *Rye whiskey* is whiskey in the manufacture of which rye, either in a malted condition or with sufficient barley or rye malt to hydrolyze the starch, is the only grain used.

6. *Bourbon whiskey* is a whiskey made in Kentucky from a mash of Indian corn and rye and barley malt, of which Indian corn forms more than 50 per cent.

7. *Corn whiskey* is whiskey made from malted Indian corn, or of Indian corn, the starch of which has been hydrolyzed by barley malt.

8. *Blended whiskey* is a mixture of two or more whiskeys.

9. *Scotch whiskey* is whiskey made in Scotland solely from barley malt, in the drying of which peat has been used. It contains in 100 liters of proof spirit not less than 150 grams of the various substances prescribed for whiskey exclusive of those extracted from the cask.

10. *Irish whiskey* is whiskey made in Ireland, and conforms in the proportions of its various ingredients to Scotch whiskey, save that it may be made of the same materials as prescribed for whiskey, and the malt used is not dried over peat.

11. *Compound whiskey* or *compounded whiskey* is a mixture of whiskey and neutral spirits in which at least 33.5 per cent by volume of the spirituous content must be added in the form of potable whiskey.

12. *Imitation whiskey* is composed of neutral spirits diluted, flavored and colored with harmless ingredients to resemble whiskey and shall contain not less than 45 per cent by volume of ethyl alcohol.

13. *New rum* is properly distilled spirit made from the properly fermented clean, sound juice of the sugar cane, the clean, sound massecuite made therefrom, clean, sound molasses from the massecuite, or any sound, clean intermediate product save sugar, and contains in 100 liters of proof spirit not less than 100 grams of the volatile flavors, oils and other substances derived from the materials of which it is made, and of the substances congeneric with the ethyl alcohol produced during fermentation, which are carried over at the ordinary temperatures of distillation, the principal part of which is higher alcohols estimated as amylic.

14. *Rum (potable rum)* is new rum stored not less than four years in wood without any artificial heat save that which may be imparted by warming the storehouse to the usual temperature, and contains in 100 liters of

Digitized by Google

proof spirit not less than 175 grams of the substances found in new rum, save as they are changed or eliminated by storage, and of those produced as secondary bodies during aging; and, in addition thereto, the substances extracted from the casks. It contains, when prepared for consumption as permitted by the regulations of the Bureau of Internal Revenue, not less than 45 per cent by volume of ethyl alcohol, and, if no statement is made concerning its alcoholic strength, it contains not less than 50 per cent by volume of ethyl alcohol as prescribed by law.

15. *New brandy* is a properly distilled spirit made from wine, and contains in 100 liters of proof spirit not less than 100 grams of the volatile flavors, oils and other substances derived from the material from which it is made and of the substances congeneric with ethyl alcohol produced during fermentation and carried over at the ordinary temperatures of distillation, the principal part of which consists of the higher alcohols estimated as amylic.

16. *Brandy* (*potable brandy*) is new brandy stored in wood for not less than four years without any artificial heat save that which may be imparted by warming the storehouse to the usual temperature, and contains in 100 liters of proof spirit not less than 150 grams of the substances found in new brandy, save as they are changed or eliminated by storage, and of those produced as secondary bodies during aging; and, in addition thereto, the substances extracted from the casks in which it has been stored. It contains when prepared for consumption as permitted by the regulations of the Bureau of Internal Revenue not less than 45 per cent by volume of ethyl alcohol, and, if no statement is made concerning its alcoholic strength, it contains not less than 50 per cent by volume of ethyl alcohol as prescribed by law.

17. *Cognac, cognac brandy,* is brandy produced in the departments of the Charente and Charents Inferieure, France, from wine produced in those departments.

MALT LIQUORS.

1. *Malt liquor* is a beverage made by the alcoholic fermentation of an infusion in potable water, of barley malt and hops, with or without unmalted grains, decorticated and degerminated grains.

2. *Beer* is a malt liquor produced by bottom fermentation, and contains in one hundred (100) cubic centimeters, at 20 degrees C. not less than five (5) grams of extractive matter and sixteen one-hundredths (0.16) gram of ash, chiefly potassium phosphate, and not less than two and twenty-five hundredths (2.25) grams of alcohol.

3. *Lager beer,* stored beer, is beer which has been stored in casks for a period of at least three months, and contains in one hundred (100) cubic centimeters, at 20 degrees C., not less than five (5) grams of extractive matters and sixteen one hundredths (0.16) gram of ash, chiefly potassium

Digitized by Google

phosphate, and not less than two and fifty one hundredths (2.50) grams of alcohol.

4. *Malted beer* is beer made of an infusion, in potable water, of barley, malt and hops, and contains in one hundred (100) cubic centimeters, at 20 degrees C., not less than five (5) grams of extractive matter, not less than two tenths (0.2) gram of ash, chiefly potassium phosphate, not less than two and twenty-five hundredths (2.25) grams of alcohol, nor less than four tenths (0.4) gram of crude protein (nitrogen x 6.25).

5. *Ale* is a malt liquor produced by top fermentation, and contains in one hundred (100) cubic centimeters, at 20 degrees C., not less than two and seventy-five hundredths (2.75) grams of alcohol, nor less than five (5) grams of extract, and not less than sixteen one hundredths (0.16) gram of ash, chiefly potassium phosphate.

6. Porter and stout are varieties of malt liquors made in part from highly roasted malt.

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH

Vol. IX. No. 3.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

NUMBER 158.

AN ACT TO PROVIDE FOR THE PURCHASE AND DISTRIBUTION OF ANTITOXIN.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. The State Board of Health is hereby authorized to purchase antitoxin for the treatment of diphtheria, and to distribute the same free of charge, upon application therefor by physicians in regular standing, under such rules and regulations as said Board may prescribe; and the expense thereof shall be paid by an order drawn by the auditor of accounts, upon vouchers duly approved by said Board.

A person selling or disposing of any antitoxin purchased or distributed under the provisions of this act for personal gain shall be fined not more than fifty dollars or not less than ten dollars. Justices of the peace and municipal courts shall have concurrent jurisdiction of offenses under this act.

SEC. 2. This act shall take effect from its passage.

Approved December 3, 1908.

CIRCULAR LETTER OF INSTRUCTIONS TO DISTRIBUTING AGENTS.

BRATTLEBORO, VT., December 31, 1908.

....,
Agent State Board of Health,

....

DEAR SIR:

I have instructed the Lederle Antitoxin Laboratories of New York, who have been awarded the contract for antitoxin by the State Board of Health,

Digitized by Google

to send you a supply of antitoxin deemed sufficient for the present needs of your city and adjoining vicinity. This antitoxin, which comes in packages of 1000, 3000 and 5000 units, will reach you within a few days.

The antitoxin provided by the Vermont State Board of Health is to be furnished free of all charge, to any person in Vermont who may need it.

Antitoxin will be furnished, however, *only on the application of the physician* in attendance on the person on whom it is to be used.

It is not expected that the agent of the Board of Health will deliver the antitoxin provided by the State Board of Health, at his own expense. A physician wishing antitoxin will be required to call for the same, in person, at the agency of the State Board of Health, or to send a duly authorized messenger. In short, a "Prescription" for antitoxin should be brought to the agent, the same as a prescription for any drug or appliance.

In order that accurate account may be kept of all antitoxin distributed, and in order also that the agent of the State Board of Health may be in a position to properly render a statement of all serum passing through his hands, the State Board of Health requires that the physician obtaining the antitoxin receipt for the same, on the blank form for receipt attached to each package. This requirement may be waived when it is not practicable for the physician to come in person to the agency, but the antitoxin should not be delivered then except on the *written* order of the physician. This written order shall not be considered a receipt for the antitoxin, and the agent should require the physician who orders the antitoxin to receipt for the same on the blank form for receipt accompanying each package of antitoxin.

In an emergency, the physician not being near the agency, and not being in a position to send a messenger, the agent of the State Board of Health *may* send the antitoxin to the patient's house (at the expense of physician or patient), on say, a telephone order from the physician, but *only on condition* that the physician agrees to return to the agency, properly filled in and signed, the blank form for receipt accompanying the package of antitoxin.

But in order that antitoxin may not be administered by other than legally qualified practitioners, an agent of the State Board of Health should not fill telephone orders unless he has satisfied himself that they have actually been given by the physician in attendance on the family. No attention should be paid to an order in this wise: "Dr. ..... says to send a package of 3000 units of antitoxin out to .....'s house." The order must be given by the physician himself."

Digitized by Google

STATIONS WHERE FREE DIPHTHERIA ANTITOXIN MAY BE OBTAINED.

ADDISON COUNTY.

Bristol—F. H. Palmer.
Middlebury—Isaac Sterns, M. D.
Orwell—Chas. L. Stay.
Vergennes—G. F. B. Willard, M. D.

BENNINGTON COUNTY.

Arlington—Dr. S. K. Gray.
Bennington—Joseph M. Ayres.
Manchester Center—W. W. Bennett.
Pownal—D. T. Bates.

CALEDONIA COUNTY.

Hardwick—S. E. Darling, M. D.
Lyndonville—Cheney Bros.
St. Johnsbury—A. H. Noyes.

CHITTENDEN COUNTY.

Burlington—W. H. Zottman & Co.
Charlotte—W. H. H. Varney, M. D.
Essex Junction—C. M. Ferrin, M. D.
Hinesburg—A. L. Larner, M. D.
Milton—Irving S. Coburn, M. D.
Richmond—Henry H. Seeley, M. D.
Underhill—Scott Nay, M. D.

ESSEX COUNTY.

Canaan—Artamus Ward. M. D.
Guildhall—J. M. Pendrigh.
Island Pond—Joseph A. Thurston.
Lunenburg—Joseph C. Breitling, M. D.

FRANKLIN COUNTY.

Bakersfield—W. B. Hyde, M. D.
Enosburg Falls—J. M. Jeffords.
Franklin—R. E. Welch, M. D.
St. Albans—Arthur Morton, M. D.
Richford—J. H. Hamilton, M. D.
Swanton—J. T. Paladeau, M. D.

GRAND ISLE COUNTY.

Alburg Springs—F. H. Rogers, M. D.
Grand Isle—G. H. Branch, M. D.

LAMOILLE COUNTY.

Cambridge, P. O. Jeffersonville—J. H. Bean, M. D.
Morrisville—W. T. Slayton, M. D.

ORANGE COUNTY.

Bradford—Fred Fletcher, M. D.
Chelsea—F. H. Godfrey, M. D.
Randolph—H. A. Leonard.
Wells River—H. H. Lee.

ORLEANS COUNTY.

Albany—O. C. Whitcher.
Barton—Fred D. Pierce.
West Charleston—R. A. Gatchell, M. D.
Derby Line—Geo. F. Waldron, M. D.
Newport—E. E. Whitaker, M. D.

RUTLAND COUNTY.

Brandon—Barker & Evans.
Fair Haven—R. Lape, M. D.
Middletown Springs—D. S. Carpenter.
Poultney—Wm. Nathaniel.
Proctor—T. H. Hack, M. D.
Pawlet—H. L. Manchester, M. D.
Rutland—L. A. Miner.

WASHINGTON COUNTY.

Barre City—Ricket & Wells.
Marshfield—H. S. Carver, M. D.
Montpelier—W. Lindsay, M. D.
Northfield—S. H. Kent.
Waterbury—F. E. Steele, Jr., M. D.

WINDHAM COUNTY.

Brattleboro—W. F. Root, Druggist.
Bellows Falls—Andrews' Drug Store.
Grafton—F. L. Gilbert, M. D.
South Londonderry—G. G. Smith.
Newfane, P. O. Williamsville—P. P. White, M. D.
Townshend—F. L. Osgood, M. D.
Wilmington—C. H. Parmalee.

WINDSOR COUNTY.

Bethel—O. V. Greene, M. D.
Hartford, P. O. White River Junction—M. P. Stanley, M. D.
Springfield—C. W. Locke, M. D.
Windsor—J. D. Brewster, M. D.
Woodstock—E. A. Spear.
Ludlow—W. N. Bryant, M. D.

Digitized by Google

The State Board of Health will have only one agency in a town. An agent of the State Board of Health consequently, may be called upon to supply antitoxin to other towns. This he may do, but, as heretofore stated, he is not expected to do so at his own expense. In the distribution of antitoxin, town lines may be ignored whenever necessity requires. In other words, the agent may, if called upon, fill orders for antitoxin from another town.

Your attention is respectfully invited to the circular letter of instructions to agents sent out by the Lederle Antitoxin Laboratories. This has received the approval of the State Board of Health.

If you are in doubt at any time as to the proper method of procedure, please communicate with me. I will send you some stamped, addressed envelopes.

Very truly yours,

HENRY D. HOLTON, M. D.,

Secretary.

Do not fail to see the tuberculosis exhibit which the State Board of Health is having prepared. It will be displayed at the Armory in Burlington from March 16 to 19, inclusive, every day and evening. Everybody in Chittenden county is invited to visit and study it. Someone will be present to answer any questions which persons may wish to ask. It will be on exhibition in every county in the state.

TOWN CLERKS.

Attention is called to Act No. 78, which requires that marriages, births and deaths shall be reported monthly. The cards on which these returns are to be made will be sent to all town clerks, as soon as received from the printer.

NOTICE.

There will be an examination on Friday, March 19, at 2 o'clock p. m., at the Laboratory of Hygiene in Burlington, of persons who wish to engage in the business of embalming human bodies.

State Board of Health,

HENRY D. HOLTON,

Secretary and Executive Officer.

Digitized by Google

Digitized by Google

Digitized by Google

GENERAL LIBRARY,
UNIV. OF MICH.
JUN 23 1909

Bulletin No. 4, Volume IX.

Issued Quarterly By

Vermont State Board of Health,

June 1, 1909.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt. under act of Congress of July 16, 1894.

CONTENTS.

Infectious Diseases, by Charles S. Caverly, M. D., President Vermont State Board of Health 3
Vital Statistics, by Edward R. Clark, M. D..... 17
Nuisances—How Cared For, by Sumner E. Darling, M. D..... 23
Practical Phases of Laboratory Work, by B. H. Stone, Director of the Laboratory of Hygiene, Burlington..... 35
Specimens Examined at Laboratory of Hygiene During First Quarter, January, February and March, 1909..... 40
News Items 53
School for Health Officers 56

BRATTLEBORO, VT.

1909.

Digitized by Google

Digitized by Google

INFECTIOUS DISEASES.

By Charles S. Caverly, M. D., President Vermont State Board of Health.

The functions of health boards, state and local, are becoming more varied every year: they have to do with the registration of vital statistics, water supplies, sewage disposal, nuisances injurious to health, food supplies, and the disposition of the dead. So that the practical work of health officials covers a wide range of activity, and calls for knowledge of various kinds.

It is true, however, that the end sought, by health laws and regulations, whatever they may directly deal with, is the prevention of disease, the conservation of physical health. So the success or failure of our health laws and health boards, in the end, will usually be measured by this standard: Do they or do they not prevent disease?

It behooves us, as public officials, to prove that the laws the public has given us and the expenditures it authorizes for enforcing them, are justified by smaller death rates and sickness rates from preventable disease. There is no more important subject for discussion, in a School of Health Officers, than infectious diseases.

I appreciate this. I appreciate the responsibility placed on me here of treating this subject before you, but I have the mandate of the majority of the State Board, from which you know there is no appeal.

It is proper that you, who are compelled to listen to my remarks, should know at once where the responsibility rests.

Preventive medicine has come into wide prominence during the last quarter century. By the most painstaking research and perfected technique, science has made a beginning in the solution of the subtle problem of disease causes. While we are warranted now in saying only this, the beginning that has been made is full of promise. Legislative bodies, state and national, have everywhere kept in touch with scientific research, and statutory laws have been made to harmonize with scientific laws on these subjects. Thus is it sought to give the people the benefits of medical discoveries.

The brunt of preventive work actually falls on the local health officer. He needs the coöperation of the medical profession to make his office the most useful to the public. The local health officer, and incidentally, the general practitioner should be men of vigilance and brains. They must have their wits about them, when dealing with preventable disease. Epidemic disease comes unexpectedly, at inconvenient times, and in the most deceptive guise. It comes unheralded, with no noise or pyrotechnics. The laws expect much of the physician and the general public.

The head of a family, in whose home there occurs a case of infectious or contagious disease dangerous to the public health shall immediately give notice thereof to the local health officer of the town in which he lives. A

Digitized by Google

physician who knows or suspects that a person whom he has been called to attend is sick or has died of a communicable disease dangerous to the public health shall immediately quarantine and report to the health officer the place where such case exists, and the name, degree of virulence and cause or source of the disease, and such other facts relating thereto as may be necessary for the health officer to make examination and act in the premises.—[Ext. Sec. 5454, Vt. Statutes.

The duty imposed by law on the public in these matters is not generally understood. Every newspaper in Vermont might to public advantage carry this extract from the laws over its local columns the year around.

You will notice, furthermore, that the duty imposed on physicians is sweeping as well as peremptory. They are required to report their *suspicions*, as well as what they are sure of. There are three well-recognized steps in the handling of epidemic disease.

The first of these is *securing reports* of these diseases to the local health officer. There is little difficulty, I believe, now in securing reports of most of the contagious diseases which are generally rated as "dangerous to the public health," within the meaning of the statutes. This list is as follows:

Typhoid (enteric) fever.
Typhus (ship) fever.
Smallpox (variola, varioloid).
Chicken-pox (varicella).
Measles (rubeola, morbilli).
Scarlet fever (scarlatina, canker-rash).
Whooping cough (pertussis).
Diphtheria (croup, membranous croup).
Cholera (Asiatic cholera, epidemic cholera).
Yellow fever.
Bubonic plague.
Mumps (epidemic parotitis).
German measles (rotheln).
Glanders.
Hydrophobia (rabies).
Epidemic cerebro-spinal meningitis (spotted fever).
Pneumonia (lobar or croupous pneumonia).
Puerperal fever (puerperal septicæmia).
Epidemic dysentery.
Erysipelas.
Leprosy.
Tetanus (lockjaw).
Anthrax.
Actinomycosis.

Physicians generally report most of these diseases, although pneumonia, puerperal fever, and perhaps tetanus are often overlooked.

Pneumonia is now reportable in most states, I believe, and that step should be seriously undertaken in Vermont. It stands at the head of our mortality tables, and this first step in its control should be taken by all local health officers. Puerperal fever is not often reported, because the disease is usually allowed to pass with a name less harsh, or one less suggestive of possible professional negligence; and tetanus is rather rare, and probably

Digitized by Google

most physicians have forgotten that it is a reportable disease. Tonsilitis should be added to this list of reportable diseases, for the intimacy it maintains with diphtheria.

Health officers should all remember that the successful handling of outbreaks of disease is impossible, if they are not reported. Enforce the laws, if possible, and to that end enlighten the medical profession and the public, through the local press, on this part of our public health laws.

The second step in the management of an outbreak of contagious disease is to *isolate* the case or cases.

The law is specific and to the point.

"A health officer shall, upon receiving notice of infectious or contagious disease dangerous to the public health, investigate and ascertain if possible the source or cause of the disease, institute means of prevention or restriction in the name of the local board."

To allow epidemic disease of any kind to get a foothold and spread in a community is a reflection on the efficiency of the health department. To stop its progress is a matter of vital importance, as it means life and health or the opposite to a certain number of human beings. The public, I believe, is generally educated up to the idea that preventable diseases are really preventable, if properly handled by the medical profession and health officers. The public therefore is apt to be critical of looseness in the handling of these diseases.

The health officer shall "investigate and ascertain, if possible, the source or cause of the disease." You will pardon me if I mention some general propositions in this connection which underlie the whole science of infectious diseases.

The infection or poison of each disease has its origin in another, a preceding case. Smallpox does not arise *de novo* nor does it arise from filthy surroundings or from atmospheric conditions. When the disease appears in a town, it comes from another case. This is perhaps our *beau ideal* of an infectious disease. Yet the infection that causes it is probably no more a distinct entity and does not owe its propagation to a lineage of smallpox patients any more surely than does the infection or poison which gives rise to diphtheria, measles, plague, yellow fever, meningitis or even pneumonia, the grip and tonsilitis. The same poison, whether a germ or protozoan, produces the same disease in all these infections. Oats do not grow on wheat-sown fields, nor potatoes where corn is planted. We have no right to think the preceding case a myth, because we cannot discover it.

There is, I fancy, some misconception on the part of a considerable number of health officers, as to the cause of epidemic disease. Let me cite some facts reported by health officers in the biennial reports to the secretary of the State Board for the years 1906 and 1907. One health officer says *in re* the origin or source of a case of chicken-pox, that the child had "not been out of the room for months." Nevertheless, we may not infer that this was a case of spontaneous generation or purely providential. There was surely

Digitized by Google

another case of chicken-pox back of this one. The medium of communication may have been the doctor, nurse, a letter or paper, or only the family cat.

Again among the outbreaks of diphtheria, reported for 1906 and 1907, I find ten health officers report outbreaks as due to "sink drainage," or "unsanitary surroundings" and one ascribes the disease to "a cold."

These same reports in several instances state that typhoid outbreaks were due to "old cellars," "bad sanitation," or "privy drainage," and scarlet fever due to "bad sanitation" or "condition of house." Poor general sanitation may perhaps predispose to these infections: that they ever cause them is contrary to the fundamental principles of modern medicine. The health officer, upon receiving a report of a contagious disease, is directed to "institute means of prevention or restriction."

The second step in the control of epidemic disease is

ISOLATION.

Each case of infectious disease is a human incubator, in which the specific poison of that disease is being grown, and from which, through various avenues, it is being spread about.

If we have scarlet fever to deal with, do not forget that the patient has the possibilities of producing the poison of that disease on a wholesale scale, and that that poison may be launched forth from his mucous surfaces and skin, to attack susceptible persons. In one way or another the same is true of all who suffer with any of the so-called infectious diseases.

The typhoid case is a culture medium for the Eberth germs, and they find exit from the body by the dejecta.

The diphtheria case, the case of measles, of whooping cough and even the case of pneumonia and the grip, is an infection manufactory, and distributes infection, each in its own devious way.

So, if you would control these infections, keep them within the closest possible limits. Hence we quarantine. We isolate the poison, and especially the individual who is producing the poison, within certain specified limits. The final destruction of that poison by disinfection, after death or recovery, is immensely simplified, if we know what house or what room in the house contains it.

Some of these infections are only spread by direct contagion from person to person, while others retain their virulence for varying times and may be held and carried by inanimate objects or human beings.

Measles and whooping cough are chiefly spread by direct contagion, while the poison of smallpox, scarlet fever, diphtheria and tuberculosis may cling to house furnishings, or personal clothing and even live in symptom-free human beings. I notice that one health officer, in the biennial reports referred to, says that scarlet fever was brought to his town by a

Digitized by Google

"fifty-cent piece" from another town. If this is so, and it probably is, we have another count in the indictment against "tainted money."

The isolation of the infected person and of all infection-carrying materials constitutes our "Full Quarantine." It is applicable to those dangerous infections, which have come to be considered a source of danger to the social, economic, as well as physical life of a community. The isolation of the infected person and the prohibition of those who may harbor the infection in its incubator stage, from public gatherings constitutes our "Modified Quarantine."

The third and final step in the control of epidemic disease is *disinfection* after the case is well or dead.

Disinfection, or destruction of infection in inanimate objects, is the general practice and considered still a necessary feature of the management of infections. This after-disinfection is more or less important, as the case has been carelessly or carefully managed during the course of the disease. If all infectious matter as it leaves the patient is carefully destroyed at once, and if the sick room is bare of dust-collecting furnishings of all kinds, the need of this after-disinfection is minimized. In actual practice, however, it is still a necessary safeguard.

The control of epidemic disease is then dependent on three distinct details.

I. They must be *reported* to the health officer.
II. They must be *isolated* by this officer.
III. The infection must be *disinfected* by him or under his supervision.

You will now allow me to state briefly and frankly what I conceive, from years of observation, to be some of our *sanitary shortcomings* in handling infectious diseases.

MEASLES AND WHOOPING COUGH.

These two diseases flourish throughout the country, usually, I believe, without let or hindrance. No serious attempt is made to control their ravages; at least no attempt that seems of any avail.

These diseases appear in our towns, get entrance to the public schools before the health officer is aware of their presence, and a wave is set in motion from this center that covers the town, and affects most of the non immune. During 1906 and 1907 there were over 8200 cases of measles and whooping cough reported to the Vermont Health officers. During these same two years these two diseases were directly responsible for 123 deaths in Vermont. It is impossible to say how many deaths from pneumonia or bronchitis or anæmia or even tuberculosis were *indirectly* due to these two diseases. Measles and whooping cough caused 123 deaths during the last two years and scarlet fever 17. We rate scarlet fever a foe worthy of our steel, and speak with something akin to contempt of those "minor children's diseases," measles and whooping cough. We know as much about the cause of scarlet fever as we

Digitized by Google

do of these other two diseases, and no more. But we effectually control scarlet fever by insisting on securing reports, on isolation and on disinfection.

Measles and whooping cough are serious diseases. Of the preventable diseases they rank in importance next to tuberculosis and pneumonia. It is high time we, as health officers and physicians, recognized these facts and that a note of warning was given the public.

The public should be told that

I. Measles and whooping cough are diseases that are "dangerous to the public health" and hence are legally reportable.

II. These diseases are preventable in exactly the same way that scarlet fever is preventable and is prevented.

III. The younger a person has either of these diseases, the more likely it is to prove fatal.

The great bulk of the public do not know these three facts, and when they learn them in connection with the real dangers that surround these diseases, the work of health officers in controlling them will be simplified.

Now I suggest to each one of you, health officers of Vermont, that you consider it a part of your official duty to tell the people of your town the truth about measles and whooping cough.

These diseases are hard to diagnose. No one is expert enough to recognize them early in the incubation period. This fact makes their prevention peculiarly difficult. The specific germ is still undiscovered. At this point science is still weak.

There are, however, certain catarrhal symptoms of the upper air passages that usher in these diseases, innocent in themselves, which we should rate as disease-symptoms. We look too indulgently on "colds." They are so common in our latitude in winter that they are the rule and not the exception.

Again the schools are the breeding places or exchanges where these two diseases are handed around. To keep measles and whooping cough out of the schools, in other words to prevent them, "colds" must be kept out of school. *We must learn this lesson and apply it to the schools. "A child that coughs is a sick child."* Such a child ought to be under the doctor's care. Such a child is not only a menace to the health of his fellows in school, but interferes with the intellectual functions of the school.

It is refreshing, in looking over the health officers' reports for 1906 and 1907, to find that one officer says he had all children who coughed sent home in order to control an epidemic of whooping cough. This is refreshing because it is the right thing to do and is so seldom done.

I speak emphatically in regard to these two diseases, because their continued and increasing prevalence is a reproach to our health departments.

The modified quarantine requires that those in the family who cannot be shown to have had the disease, should keep away from all public gatherings. This is as far as the present state of public opinion seems now to warrant

Digitized by Google

us in going. Of all public gatherings to which children are accessible, the most important as bearing on the spread of these diseases is the public school.

DIPHTHERIA.

This disease has largely lost its terrors to the health official. Antitoxin, as a curative and immunizing agent, has done much to conquer this one-time scourge.

There are two points with reference to this disease to which I wish to refer. First, the *mild, atypical* cases. There can be no doubt that much damage results to the public from the mild case of this disease. We are prone to doubt our diagnosis, or perhaps the Laboratory diagnosis, in some of those cases of sore throat which are not sick enough to be in bed. We have been having in this country during the last ten years an object lesson in mild smallpox. We have seen hundreds of cases of this disease, without a death and with little severe sickness. The true diagnosis was long a subject of lively controversy, and with no bacteriological landmarks for guidance it has taken years for us to realize that this old-time scourge could be anything but the loathsome and fatal disease of early days. If smallpox can flourish in this mild form, why not diphtheria or any other disease?

Fortunately we have other resources in diphtheria in making a diagnosis. The Laboratory helps us out. We have heard over and over again about the presence of Klebs Loeffler bacillus in otherwise healthy throats. "Bacilli carriers" are probably common on the street and in all public places. In a family in which the disease is known to exist, our regular routine should be to get cultures from all. We should be careful of "tonsilitis." There are sore throats of doubtful nature very common where the Laboratory can alone decide. We should use the Laboratory more freely for the purposes of diagnosis.

The second point that must be mentioned in this disease is the determination of the time for raising quarantine. It is recommended that quarantine in this disease shall not be raised until two specimens of the secretion taken from both throat and nose, three days apart, have been found negative at the Laboratory. How generally is this done? I presume most physicians consider one negative report sufficient. With a nervous patient and more nervous family to deal with, chafing under the restrictions of quarantine, there is a great temptation for the family doctor to take his culture carelessly from some portion of the mucous membrane, not infected, and hurry the termination of the quarantine when such a culture is reported negative. Diphtheria cultures taken for the purposes of releasing a family from quarantine should be taken by the health officer as a rule, or by some other doctor than the regular attendant. More reliable results could be secured from such a practice, and such a practice would relieve the attending physician of a share of the responsibility for the inconvenience of the quarantine. The provision for two negative cultures, three days apart, enhances the safety

Digitized by Google

of the public. When we can learn to rely on the Laboratory in detecting this disease, in doubtful and mild cases, and again in releasing cases, our now small mortality from this disease will be nearly wiped out.

TYPHOID FEVER.

This disease is still too common, and several reasons are obvious. Typhoid fever is not always correctly diagnosed. "Continued fever," "bilious fever," and "fever" are names not yet extinct. Para-typhoid has come of late to have a standing in our nomenclature, but I suspect that it sometimes, in the absence of exact bacteriological examination, is made a scapegoat for typhoid. The name *typhoid* has come, fortunately or unfortunately, to mean something akin to *disgrace* to a community. Inducements, more or less moving, are held out to physicians and, I believe, health officials, at times, to drop the name typhoid.

In this disease, as in all seriously regarded infectious diseases, we ought to exhaust all the resources science furnishes to make our diagnosis correct. Here again we should oftener use the Laboratory for diagnosis, for mild typhoid is, perhaps, as common as severe. Another feature of the management of this disease too often escapes attention. The stools are not given any sufficient disinfection and those in attendance on these cases are not sufficiently cautioned about the carrying powers of flies and their own hands. I know of no infectious disease which nurses in actual practice oftener acquire than typhoid fever.

The home treatment of this disease should be attended with the most painstaking care. Stools should be allowed to stand for at least one half hour in contact with the disinfectant before being emptied into water closet or buried. The too prevalent practice of pouring a liquid disinfectant or scattering an ounce of chloride of lime over the contents of a bed pan and emptying it at once into the closet is usually a waste of disinfecting material. The sick room is seldom screened against flies, and nurses and others who participate in the care of the sick, too often forget to disinfect the hands before handling food. There can be little doubt that the extension of typhoid fever from one to another of a family is often due to this kind of negligence.

SCARLET FEVER.

This disease has been very materially reduced in our state. It is subject to a "full quarantine," and such precaution is now quite generally complied with. The further reduction of this disease, its prevalence and mortality, will probably require attention to two details sometimes overlooked. First, we must remember that this disease occurs at times in a most atypical form. *"Scarlatina sine eruptione"* is pretty generally recognized as a type of this disease. We all know the follicular tonsilitis prevalent during a scarlet fever outbreak. Cases of sore throat, with scarlet fever present in the community,

Digitized by Google

should always be regarded with suspicion. They should be quarantined as such until the symptoms abate.

Second, the period of desquamation in this disease is sometimes provokingly long. There is perhaps no disease in which the period of isolation that should be followed is so variable. The safe rule that this period should continue until desquamation is complete and all aural and nasal discharge ceases, is too often neglected. A child with desquamation still in progress and with an unusual discharge from the mucous surfaces may still endanger the school. It may be necessary in some of these cases for the quarantine to be continued for ten or twelve weeks, before the case can be safely released. These precautions may seem to some excessive, yet, as I said, if further reduction in the prevalence of this disease is to be attained such seeming excessive precautions must be enforced.

SMALLPOX.

The comparative harmlessness of this oldtime destroyer has tended to disarm us as to the necessity of preventive precautions in regard to it. There is danger that we come to regard this disease as a rather harmless disorder, one that frightens, but does not kill. It is true that the fatalities from this disease are wonderfully infrequent as compared with early recorded statistics of its frightful consequences to our race. Yet we have no guarantee that coming outbreaks may not suddenly repeat the horrors which history shows it to have once had. There are unfortunately many people, who profess to look with more horror on vaccination than on an attack of variola. At the same time we must never forget for an instant, that of all the established truths of modern science, none is more generally and thoroughly entrenched by long experience than this: *vaccination does protect against this disease and is its only known preventive.* We have no right to wait for its presence in our midst to insist on vaccination. Local health boards should periodically urge the necessity of vaccination on all our communities. No child should be allowed to reach the age of five years, without being thus protected against this disease.

CHICKEN-POX.

We have had in this state, during the last decade some instructive object lessons in the diagnosis of eruptive diseases. Chicken-pox and smallpox even, in the mild form in which we have known it of late, are not very fatal diseases. Yet nothing so demoralizes the social and economic affairs of a town as the discovery of a case of smallpox. Mild cases of smallpox have been wrongly diagnosed in many parts of the state during the last ten years, beginning with the notorious experience of Hardwick. Usually the mistake has been made of calling mild smallpox, chicken-pox. There is really not much difference in the two diseases and an individual case may tax the diagnostic ability of the most experienced practitioner. The

Digitized by Google

lesson is perhaps pretty thoroughly learned, that in case of doubt go slow and get the best counsel available. The mistake of subjecting an innocent chicken-pox patient and patient's family to unnecessary quarantine and publicity, is only exceeded by the damage done by the panic that may follow overlooking a mild case of smallpox and calling it chicken-pox. So I say, go slow with doubtful cases, and do not allow pride to interfere with a confession of doubt. It may not be amiss at this time to recount some of the diagnostic symptoms between these two diseases. Age should be considered. The occurrence of chicken-pox in an adult is rare. If a child, with a good vaccination scar presents evidence of one disease, the presumption is strong that it is varicella. The initial stage of chicken-pox is short and mild, compared with the three days of fever, chills, headache and backache of smallpox. The appearance and distribution of the eruption in chicken-pox differs materially from smallpox, in that the case of smallpox shows the eruption first and thickest on the face and distal portions of the extremities. The eruption itself in chicken-pox is apt to be somewhat different in appearance. It lacks in the papular stage the "shotty feel" described in smallpox. There are present large and small sized pustules and scabs and various stages of the eruption are apt to be found at the same time on the same person. In smallpox the eruption undergoes a more uniform progress and takes longer than in chicken-pox. No one of these diagnostic symptoms is a safe guide to a differential diagnosis, but the case in hand must be judged on a careful consideration of all these symptoms.

TUBERCULOSIS.

The universal warfare against this disease has had its effect, and it now causes fewer deaths than ever before. In no line of preventive work is the prospect more encouraging for further and greater saving of life.

Health officials should have a share in this work. The present Vermont law, unfortunately, removes this disease from the jurisdiction of the local health officers, and requires that it be reported directly to the secretary of the State Board. This law is a failure. It is quite generally disregarded, as we all know; and as far as its statistical value and its practical utility in preventing the disease are concerned it is a farce. It would seem that the time is now ripe for a revival of interest here in Vermont in tuberculosis.

The generous benefaction, which provided a model sanatorium for tuberculous cases, merits a hearty response from the people and the medical profession. The health officers of the state should take a practical interest in helping a movement that will enable our people to get its full benefit. With probably 500 cases of incipient tuberculosis constantly among us, it has been thus far impossible to fill 32 beds in this institution with this class of cases. The sanatorium, we all know, has its place in the scheme of prevention of this disease. Its work is preventive, as well as curative.

Digitized by Google

While you may not have official knowledge of tuberculous cases, or authority over them, let me bespeak for the anti-tuberculosis crusade in Vermont your active coöperation by first telling the people of your towns that the early recognition of the disease is most important; second, by telling them that neglect of the early case, by persistence in working or the ordinary routine of life, reduces the chance of cure tenfold; and third, by urging the public and the medical profession to take advantage of the sanatorium treatment for incipient cases.

In this connection I may properly refer again to the need of further legislation against this scourge in Vermont. As I said, the present law requiring reports of cases is a failure. This is a communicable disease, one that is dangerous to the public health, and should not be treated more leniently than other diseases so classed but less fatal. Indeed after the last decade of educational work among our people, and in view of the still frightful mortality from tuberculosis and of the success that has already attended restrictive measures, it seems justifiable to adopt more drastic legal measures against its spread than are now used against most of our preventable diseases. To this end let me refer to a law recently enacted in the state of New York. This law requires every physician to report the disease to the local health authorities; likewise, public institutions must make these reports. The register of these cases is protected from publicity. All apartments vacated by the tuberculous must be reported to the local health officer and he must see that they are disinfected, at public expense. Such premises must also be cleaned and renovated, under orders from the health officer, by the owner, and, if not done according to such orders, may be placarded by the health officer, preventing their reoccupation. The health officer may, upon complaint and investigation, serve a notice upon a tubuculous spitter, requiring him to dispose of his sputum in such a manner as to cause no offense or danger. A violation of such a notice is a misdemeanor. Physicians reporting the disease shall receive from the health officer a printed statement, giving precautions necessary to be taken on the premises of a tuberculous case for the protection of others. Physicians may carry these precautions into effect, for which they are paid $1.00, or if unwilling or unable to do so, they shall so certify to the health officer, who shall assume this duty. Circulars of instruction and sputum analysis are provided at public expense.

The enactment of this law shows how seriously one great state still regards the tuberculosis problem, and we all know that the enforcement of such a law must instantly result in great saving of life.

With this example before us and with the stimulus which the approaching International Congress on Tuberculosis at Washington is sure to give to preventive measures in our country, we must look to the Vermont legislature this year to give us a more stringent and practicable law on this subject. The moral influence of all local health officers should

Digitized by Google

be in favor of giving our people the greatest benefit possible from our Vermont sanatorium and the enactment and enforcement of modern laws against tuberculosis. The tuberculosis fight is half won. The united and enthusiastic support of all Vermont health officers will go far to complete the victory.

PNEUMONIA.

A glance at the causes of death in our state will show the important place which this disease has taken. Pneumonia causes more deaths than any other disease in Vermont. In the present state of public and professional opinion and of scientific knowledge of the disease it is doubtful just how far health officials are warranted in going in an effort to control the really frightful mortality from this infection. The disease is now officially reportable. It is really seldom reported. This step, at least in its restriction, seems reasonable, and health officers should call the attention of medical men to this rule.

The medical men of the state should be more generally made to appreciate its importance, and should be required to report this disease. It may not be wise at this time to insist on any more radical preventive measure against it; when it is generally reported, the next step can be considered. At least instructive literature can be placed in the hands of the family, as to the prophylaxis of the disease, as it is now attempted in tuberculosis.

Finally, health officers of Vermont, seek the respect of the physicians of the state, if not their friendship. You ought to have both. Go about your work in dealing with infectious diseases earnestly and tactfully. Above all things the medical profession should know that you "mean business," and you should be at the same time tactful and conciliatory as far as duty will permit.

The medical profession is the natural ally of the Health Department. Physicians can do much to make our work in controlling disease easy and successful, and I am glad to think that the great mass of the profession cheerfully coöperate with us. Treat medical men with unfailing courtesy, when called to quarantine, investigate or disinfect their cases. Treat all with the utmost impartiality. These are truisms, I know. My observation leads me to think they bear repetition. The doctor first sees the case of infectious disease, he first recognizes the danger to the public. His cheerful compliance with health laws and rules should be sought at all times. It is a painful duty, which sometimes falls to the health officer's lot to prosecute a negligent physician. If necessity compels this step, do not hesitate, for respect for the law in these matters is vital to the public. You owe a duty to the medical profession, to seek, by all reasonable means their aid; you owe an even higher duty to the public to insist on the medical man's compliance with the laws, which have to do with these diseases that are construed as "dangerous to the public health."

Digitized by Google

DISCUSSION.

Dr. W. B. Hyde.

I am very sorry that I was unable to hear Dr. Caverly's paper, but I was attending the state convention when he delivered it. I was here on Tuesday, the day set for the paper, but owing to the rearrangement of the program, I was not able to listen to it, so I am at a little disadvantage.

The question of infectious diseases as it has to do with the health officer comes to the question of quarantining. I think there should be a uniform rule among health officers with regard to fumigation after infectious diseases. We have, as all of you know, two kinds of quarantine; full and modified. When we have a disease which comes under the modified quarantine, many of the health officers feel that the disease is so slight that they do not need to isolate the patient and in this manner the disease is conveyed to others. If you stop to look this matter up, you will find there are many cases of German measles which are never quarantined. You will find in some of your neighboring towns, that there are school children attending school who are suffering with mumps. There will be found on the street children suffering with chicken-pox. If you are strong in the enforcement of all within your jurisdiction, you are working to a great disadvantage because the people are pointing to their neighbors over there and saying, If it isn't necessary for them to be quarantined, why is it for us? They wonder why they are quarantined and why their neighbors go free. There is a hard proposition before us to be fought out among ourselves. You have found that you are robbed of the moral support of the people because they say if the other health officers are not obliged to quarantine for German measles and chicken-pox and mumps, why are you doing it? You will find, if you look this matter up, that you haven't the support of the better class of people simply because they see the law is not being properly enforced in all the towns alike. So it seems to me if we are going to handle the infectious diseases properly, we must come down to the facts and either all of us enforce the quarantine or have an understanding that we are all going to let up on the quarantine. It has become so set that the people understand that the rule is not going to hold in all towns throughout the state and by all health officers, and they feel they have a right to deceive the health officer and not to have a quarantine placed for measles, mumps, chicken-pox, etc. You have perhaps felt that the people are inclined to send for another physician when they have a suspicious case because if they employed you, you being their health officer, would quarantine them. There is a great lack of uniformity with this matter. Take a small town for instance. A patient comes down with a contagious disease and calls in an outside physician to take care of him. The health officer has the remedy in his hands but he does not care, as a rule, to carry it out unless the majority of health officers are enforcing the law. He does not care to have all of his profession down on him because he is enforcing the

Digitized by Google

law. Some of us like to live in peace with our neighbors and certainly can not if there is no uniformity among the health officers.

Dr. C. S. Caverly.

I do not care to take much time to close the discussion. The point raised by Dr. Hyde is whether the health officer, when he accepts this office, accepts the duties imposed upon him. I will say that the law requires every health officer to perform his duties which are specifically laid down for him. Dr. Hyde said we ought to have a uniform understanding as to whether we are going to enforce the quarantine rules and regulations or not. Most assuredly you are going to enforce those rules; if any health officer accepts the office and does not intend to enforce these regulations, he should resign at once. There is a penalty attached to neglect of duty. Public sentiment wants the health officer to do his duty. There is a great deal of laxity in dealing with these minor children's diseases. It is exceedingly difficult to make a correct and early diagnosis in whooping cough and measles. It is practically impossible, as I have said in my paper, to put any check that will be effective on the spread of those diseases, until we regard colds as serious and until we learn to bar coughs and colds from the schoolroom. It is a fact that all children having coughs should be excluded from that schoolroom. I have explained these matters to the teachers in the various parts of the state. There are a great many who will not, or rather who fear to enforce such regulations because they have not the moral support of the school commissioners, but until we bar coughs and colds from the schoolroom, it is impossible to control whooping cough and measles. It is absolutely impossible to recognize whooping cough until the child has the well-known whoop. There has been considerable discussion in regard to mumps. I did not mention mumps in my paper for it is a disease that is not often fatal and it does not figure in our mortality tables. Mumps is generally a harmless disease. The complications which develop after mumps are sometimes serious; rarely a nephritis which is fatal follows a case of mumps. Mumps should be subjected to the modified quarantine. When a patient suffering with mumps is allowed to travel on the trains, some one is just as liable to prosecution as though the patient were suffering from smallpox, scarlet fever or diphtheria.

Digitized by Google

VITAL STATISTICS.

By Edward R. Clark, M. D.

In my judgment the importance of vital statistics can hardly be overestimated. Somehow since my earliest recollection I have had a lurking idea that the registration of vital statistics was of more than passing importance. In this state the first law that amounted to anything in the way of registration was enacted about one year before I was born.

For some years previous, and altogether for about twenty years, my father was clerk of school district number nine in Peacham, Vt., and as I grew older I well remember with what care he collected the statistics of his territory and returned them to the town clerk, as then required by law. I remember well, also, of asking him what was the use of all that fuss, and he took great care to explain to me his conception of the why and the wherefore. I am pleased to say that in later times my experience has fully justified all that he said and more.

The vital statistics of our state for fifty years, incomplete and faulty as they were in many instances, have shown us that our fathers did wisely and perhaps more wisely than they knew. It was the best the times afforded, and if nothing else has been done it has served to show what may be accomplished under a better system.

Whether our present system is the best that can be devised time alone can tell. Certainly, so far as I can find, nothing has yet appeared which offers anything better.

Men in general may be divided into two classes—those who do and those who do not.

Those who do not are often in the majority. Those who do, almost always have some idea, and often a clear one, of the duties they owe to their neighbors and the community as a whole. Physicians and health officers are no exception to the general rule.

In times past many physicians have made only the most perfunctory returns, doing as little as they possibly could to comply with the law of 1896, *in re* the registration of vital statistics that came under their notice, oftentimes going so far as to tell people that this matter of the death certificate, the birth certificate and the burial permit were simply all a piece of tommyrot; so much so that people, otherwise well informed, readily believed it was so, until the matter was fully explained to them.

No one is infallible, not even myself, as I have had abundant reason to know or find out in the last few years, and especially during the last year. It was a case where I thought I had taken a good deal of care to have the cause of death properly inscribed, but in due course of time there came a letter from the secretary of the State Board asking what kind of a pelvic

Digitized by Google

abscess it was. In my simplicity I had thought pelvic abscess covered the ground. But to get a little more definitely to our subject.

The importance of vital statistics may be considered under three heads:

I. Their value to the health official and preventive medicine.
II. Their value to the community in general.
III. Their value to the individual seeking to establish his family history or to locate his dead.

As to the first of these I need say little or nothing. The second is so correlated to the first that its importance must be apparent to any one who has any idea of the growing needs of our more complex modern ways of living. As to the third, its importance has been brought to me again and again, and I wonder who in this assemblage has not at one time or another had his attention called to the importance of this third proposition: house where I now live; my own family. And this brings us to what seems to me to be a proposition of exceeding importance. Statistics to be of any great value must be

First: Exact.

Second: Complete.

Third: Written in a plain hand with unfading ink.

Fourth: Uniform in construction, for convenience in transmission and preservation.

In my judgment it is of a great deal of importance in a given case, that in making up the returns called for on a given registration blank, that they shall be exact, i.e. that for instance in case of the birth certificate the facts stated should be absolutely correct. Namely, the date of birth, sex, nationality, etc., but also to my mind the birthplace of the parents, and by place of birth of parents I do not believe we should be satisfied with saying that the father or mother was born in Germany, Ireland, or Holland, New York or Nevada. But the exact township, city or parish should be sought for and recorded; for it often happens that parents die before children are old enough to learn from their parents any of the circumstances of their early lives, and you and I do not know how important it may be to some one, at some time, to have a public record of the facts in the case.

Another thing that to my mind is of exceeding importance and pertains to exactness, is to see to it that proper names are spelled out in full. It is not enough to say on the birth certificate that the father's name is E. W. Jackson or J. P. Miller. It should be Eugene Watson Jackson or John Prentiss Miller. For it has not infrequently happened in the same town were several men of the same surname with identical initial letter or letters. For instance, when I was a boy, in the neighboring town of R—— were seven men by the name of William G———, and only one of them had a middle letter or name. They were known as follows: Postle Will, Red House Will, Swamp Will, Turkey Will, Tooth Will, Thumb Will, and the seventh I cannot now recall.

Digitized by Google

Now further to identify the parents is the age of the father and mother, and who will say that that is unimportant?

Now all that has been said concerning the birth certificate can be said of the death certificate. Name of the deceased, age; name and place of birth of parents. Don't be content with saying that the deceased was born in New Hampshire or Massachusetts, or that his parents were, but tell the town. Sometimes it can not be readily found, but usually a little care and inquiry will bring the desired information. The other day there was sent to me a death certificate where names of father and mother and birthplace were marked *"don't know,"* when there were at least four persons within forty rods of the physician's office who could have supplied the necessary information, and who did supply it to me afterward and I placed it on the record.

It is a question in my mind if the health officer should not refuse to issue a burial permit on a death certificate thus issued, especially when it is plain that the actual information could be so easily obtained. But there is another matter which it seems to me would many times tend to exactness. Often in his work the physician finds some persons whose known relatives have all passed over the River, and who it appears is approaching his last long journey. Now in such a case it has seemed to me wise to inquire of such an one and record his family history. In several cases the whole personal and family history of the deceased would have been blank had not such inquiry been made. Thus far I find that in speaking of exactness I have trespassed on the division of the complete.

There is yet one thing having to do with the death certificate, and that is the cause of death. A few years ago a health officer, now deceased, showed me a death certificate in which the cause of death was given something as follows: A certain blood dyscrasia developing fever and causing death. Now this was a puerperal case, and the young mother died on the tenth day. In another case in which a physician had been discharged and another one employed in a pneumonia case, the death certificate read: Pneumonia, contributory cause—been in the care of another doctor; was called only two days before her death. Now in the first instance what could you or I or any registration official make out of such a statement of cause of death? Or in the latter what earthly or heavenly thing could a registration official or any one make of it?

The handwriting on the registration blank is not usually "a thing of beauty and a joy forever," but what a joy it is to find a death certificate that is written neatly and in a hand as plain as copperplate. I wish that every physician in this state could see their death certificates as they are seen by the health officer or other registration official. As I see some of the certificates that come to me I wonder what some one who in after years may be pawing over these records will think of the medical profession if we are to be judged by the neatness and care with which our records are made out. A few years ago I had occasion to look over some records in a town

Digitized by Google

in the northern part of this state, and what a joy it was, for every thing to the last detail was as exact and plain as copperplate.

My office is next door to our town clerk. I am ashamed for the medical profession for the frequency with which he calls me to decipher some hieroglyphics of my neighboring medical men.

In the fourth place, *in re* uniformity of construction. Is there any necessity for saying anything? Certainly not, for anyone who has thought of the matter at all.

There is one thing in our state to which I would call attention, and that is in relation to penal statistics.

DISCUSSION.

Mr. C. E. Allen.

I certainly did not expect to be called upon to say a word. I am not a member of the meeting, but I am very much interested in the subject of vital statistics.

I have had some experience, however, with this subject. Perhaps some of the members present may recall two quite lengthy papers which I submitted to two of your health officers' meetings. The subject of vital statistics is an exceedingly important one. We all know that statistics are facts classified and vital statistics are those that concern humanity as a whole. The importance of a careful systematic collection of facts relating to vital statistics, therefore, is unquestioned. These facts are entirely useless, and worse than useless, because they would be misleading, if they are not properly, carefully and reliably prepared. Ten years ago when I was clerk of this city and my attention was called to the matter of vital statistics, with a request that I should prepare a paper on the subject, I was chagrined, I was disappointed to find existing such a condition as I did. The printed tables were very unreliable. In one year I found a mistake of sixty-eight thousand deaths. You would hardly believe it. In another year I found a mistake of nearly one thousand births. You would hardly believe that. In those days the matter of sex was not recorded as it should have been and there was a discrepancy which would call the attention of any one who took the advantage of the opportunity to look over these tables to errors somewhere. If they had the time, they could dig them out, of course. However, very few of us have this time. Since then the advance in the subject of vital statistics has been very great in this state. The registration laws have been made not only to be what they ought to be, but they have been made to conform to the suggestions of the best judges upon the subject. The association on public health in Washington prepared blanks and asked the different states to pass laws to see that these blanks were filled out correctly, properly and fully. What is the result? Look into the last report of the State Board of Health of this state. The improvement is very great. The results of the information given there can be relied upon. Before they could not be. One little matter has been suggested by the paper which was read

Digitized by Google

this evening and by one or two of the speakers, viz. that it is not the fault of the law, nor the fault of the blank, but the fault of the individual who fills out the blanks and sends them to the State Board of Health. If a physician has not the time to write medical words and terms so that his writing can be read, I might almost say that he had better not write at all, because the Board of Health depends upon his report, and the aggregate of these reports is the general report of the State Board of Health and that is what the public, what the state of Vermont, and what the people of the state want. Not only the people of this state, but if these laws and these blanks are uniform throughout the entire United States (as they will be now) the different boards of health will have something which can be used for general comparison. We will have something that will tell us what we want to know. I am very grateful personally to the State Board of Health for the labor, the enormous labor they have performed in bringing the whole subject to its present condition and all it is necessary now for us to do is perhaps by some future legislation to make amendments in some trivial respects and carry out the law as it stands upon our statute books to-day. Then we will have something upon which we can rely; something that will instruct; something that will answer the questions which so many in these times are asking, and thus secure the success of the work of public hygiene upon which the welfare of the community so largely depends.

George R. Hall.

I only want to emphasize one thing and that is with regard to the death certificates which come to me as health officer. Sometimes I have to turn to a medical work to get the name of the disease, as the writing is not legible. A good many times it would need the services of a Philadelphia lawyer to read some of the writing. I think in some cases, the doctors might write a little better if they saw fit. I think it would be well to call their attention to it, so that whenever they have occasion to fill out these certificates, they may take at least time enough to write plainly so that others may read what they have written. Before I can issue a burial permit I must have the cause of death, and it takes me considerable time to look up some medical work in order to ascertain what is written.

Dr. Henry D. Holton.

During the last six months the returns of the deaths have come in on the blanks from the town clerks, which were copied by the town clerks as accurately as they could. The physicians should remember that town clerks are not medical men and do not understand medical terms, and it is often difficult for them to tell what is written. Some very interesting causes of death have been noted in those certificates. We wrote over four hundred letters to the physicians whose names were given as reporting to the town clerk, to get the cause of death. There were a great many causes given as cancer. What can I do with that? How can I classify it? I have to send

Digitized by Google

my report to the census bureau in Washington and they will not accept any such cause. Another cause—drowning. Was that suicidal, accidental or otherwise? Sometimes the physicians get irate and say, "If you will look on my certificate, you will learn the cause of death." I write back as meekly as possible: "My dear sir: If I had seen your certificate, I probably should be able to learn the cause of death, but as I have never seen it, and only have a copy from your town clerk, I cannot tell what you gave as the cause." I usually get a nice letter in return. I never see these certificates. The law makes it compulsory that these certificates remain the property of the town clerk and must be retained in his office, as the permanent record of the town clerk's office.

Digitized by Google

NUISANCES—HOW CARED FOR.

By Sumner E. Darling, M. D.

The subject "Nuisances—How Cared For" is one that has concerned the governmental machinery of towns and cities only recently. Before the French Revolution we find that towns and cities in Great Britain and continental countries practically made no attempt to abate conditions that we now consider nuisances. It was a common sight to see the streets full of sewage, débris and all kinds of filth. The only time the streets received a cleaning was during a heavy rain storm. No attention was paid to the purity of the water supply. The unsanitary conditions of tenement houses and dwellings, together with their filthy environments, which were so often the starting places of epidemics, were practically ignored. No provisions were made to render the air of cities and towns free from poisonous gases and clouds of dense smoke. Conditions became so unsanitary that it was a common maxim that families that moved into the cities or villages from the country would only last a few generations.

Paris was awakened from the lethargy common to all cities at that time by the gradual decrease in her population and the high rate of mortality. The deleterious effects of unsanitary conditions upon her citizens were fully realized when the time came for recruiting her army. Health and physical tests made by army officials showed that the physical condition of city inhabitants was far below that of the rural population.

Paris, the first typical modern city, taught the world the lesson of cleanliness. It was Paris who first adopted modern methods for the proper care and disposal of sewage, for the securing of unpolluted water and the keeping of the air free from gases, disagreeable odors and clouds of smoke. The great change that came over Paris after the subject of nuisances was taken up by the government and vigorously attended to, can be fully realized when we consider that the rate of mortality has been greatly decreased and that a recent physical test made by army officials brought out the paradoxical fact that the urban population was better adapted physically for military service than the rural inhabitants.

The great advancement that has been made in improving the conditions of city life has tended to make us regard things as nuisances that formerly were considered as having no connection whatever with public health. The term nuisance then has had a gradual growth and at this stage of civilization means not merely that which interferes with the health of a community but that which interferes with its comfort.

It is impracticable to give a precise, technical definition of what constitutes a nuisance, but the word itself is sufficiently understood, and means, literally, annoyance, anything that worketh hurt, inconvenience or damage, although it is always a question of fact whether a nuisance exists in

Digitized by Google

a particular case under all the circumstances. It may be said, generally, that anything which is detrimental to health or which threatens danger to persons or property, may be regarded and dealt with as a nuisance. If it affects the rights of the community in general, and not merely of a few persons, if it damages or menaces all persons who come within the sphere of its operations, though it may vary in its effects on individuals it amounts to a common or public nuisance. Every person commits a common nuisance within this definition who does anything which endangers the health, life or property of the public or any considerable part of it, and everything is deemed to endanger health, life or property which either causes actual dangers thereto, or which must do so in the absence of a degree of prudence and care, the continual exercise of which cannot reasonably be expected. Every person is absolutely bound to so conduct himself and to so exercise what are regarded as his natural or personal rights, as not to interfere unnecessarily or unreasonably with other persons in the exercise of rights common to all citizens. The whole doctrine of nuisances, as it now exists, may, therefore, fairly be said to be a development of the maxim, that every person is bound to so conduct himself and to so use and enjoy his property as not to cause unnecessary annoyance or obstruction to others.

Precisely what is the reasonable use of one's property cannot be determined by any useful general rules, but must depend upon the circumstances of each case. A use of property in one locality or under some circumstances may be reasonable and lawful, which under other conditions would be unreasonable and a nuisance. So that the question whether a particular act or thing constitutes a nuisance depends for its determination upon the consideration of all the circumstances of the case, and the most important and influential circumstances to be considered are locality, the extent of the annoyance and the nature of the act or thing itself. For example, a dead animal in a state of decomposition was reported a short time since as being in a barn in Hardwick, located at the end of a road so far distant from any dwelling house or public highway that the odor from it annoyed no one. Under such circumstances, there was no existence of a nuisance. If this dead animal had been near a public thoroughfare or dwelling house or had been a source of annoyance to anyone it would have been a nuisance and an order for its burial or removal would have been necessary.

Some of the most common nuisances that the health officers' attention is called to are the improper care of animals, polluted water, slaughter-houses, sewage and the carrying on of a business or trade so as to cause annoyance or discomfort to persons living in the vicinity.

The improper care of animals in villages and crowded districts is a continual source of complaint. It is difficult to realize how serious a nuisance may be created by the keeping of hogs. Hog-yards should never be allowed in any crowded neighborhood. If they are to be kept at all, yards and buildings should be well drained and kept dry. Feed-troughs should be

Digitized by Google

made of iron and washed frequently to prevent the decomposition of food materials. Manure should be removed frequently. It is not only for the comfort of people but for their health that the proper care of hogs should be demanded. Hogs should be well fed and kept free from scurf in order that the yield of pork may be greater and of better quality.

The distribution of impure milk in a community is one of the most perplexing nuisances because of the many serious results that are sure to follow. This common nuisance may be easily remedied if steps are taken to see that the cows and stables are properly cared for. The stables should be well ventilated and kept clean. Manure should never be allowed to remain in the same building. Too much care cannot be taken in seeing that the cows are well kept. Before milking, especially, care should be taken that the cows are clean. After the cows are milked, the milk should not be allowed to remain in the stable but should be carried immediately to a separate building for further preparation.

Again, the incessant noise and odor resulting from the keeping of poultry in a village creates a nuisance so bad that it has to be felt to be appreciated. The keeping of poultry in a village should be prohibited unless there is sufficient room and the yards and pens are kept clean.

The improper care of horses gives rise to many complaints. Stables in which horses are kept should be well built and properly drained. Manure should be removed at least once a month during the summer season.

Polluted water is a nuisance which is common to many localities. In places where there is no main water supply, great care should be exercised in supervising the various wells that furnish the water. Wells that are likely to be contaminated with sewage or any other filth should be ordered closed. In localities where the inhabitants depend upon a main water supply, care should be taken to keep the territory between the reservoir and sources of supply free from objectionable material. As the decomposition of animal and vegetable matter in water is well known to be the cause of diarrhœa, and in many cases where the water is unusually foul, of dysentery, and as we have so many positive instances of typhoid epidemics from polluted water, frequent inspection should be made of the watersheds in order to render the water free from sewage and the decaying of animal and vegetable materials. Polluted water which is not used for drinking purposes should be taken care of. Lands which are wet, rotten, or spongy, or covered with stagnant water are injurious to health and as such are nuisances. If such places are offensive to persons residing in the vicinity, they should be promptly abated.

The nuisances produced in slaughter-houses are usually confined to the immediate neighborhood. The noises and peculiar odors due to the keeping of the live cattle, the generally uncleanly condition of the buildings if not properly paved and drained, caused by the decomposition of scraps and spattered blood attached to the walls and floors, the storage and accumulation of the hides, skins, blood, fat, offal and manure all show the ne-

Digitized by Google

cessity of removing the slaughter-houses to a considerable distance from any dwelling-house or public way. It should be observed that the nuisances caused by a hog slaughter-house are more serious than those of a cattle slaughter-house. The odors are more unpleasant and travel to a greater distance. The noises made by the animals are far worse. It is, therefore, nesessary that a hog slaughter-house should be far more remote from dwellings than one used for cattle alone. What has already been said in relation to the keeping of living animals is applicable to the stockyards and cattle-pens connected with the slaughter-houses. The stockyards as well as the slaughter-houses proper should be furnished with a plentiful supply of water so that every portion of the building can be kept clean and sweet. The sole method of abating the nuisance of a slaughter-house is to destroy the odors as soon as they are produced. The floors of the building should be made of concrete, the side walls covered with an impervious material to the height of six feet from the floor. The fat should be placed in tanks as soon as received and the rendering commenced at the earliest possible moment. No wood or porous material should be allowed on the premises.

The disposal of sewage is one of the nuisances that causes much trouble to the local board of health. In localities where there is no public sewerage system the disposal of sewage should either be carried so far away from the premises as not to become dangerous to the public health or emptied into cesspools. When cesspools are resorted to for the disposal of sewage, care should be taken that they be well constructed and so far removed as not to interfere with the water supply or become offensive in themselves. In localities where there is a public sewerage system, all parties owning dwelling-houses or buildings abutting on the street where there is a public sewer should be obliged to connect all drains and sewers with such street sewer.

There are existent certain products, the handling and treatment of which can scarcely be conducted without offense. It is impossible to describe every trade which may become offensive together with the remedy necessary in each case.

In manufacturing cities the escape of smoke from the many chimneys gives rise to frequent complaints. All investigations on the subject of smoke consumption have shown the almost absolute impossibility of entirely abating the nuisance arising from such a source in these localities. The noise of boiler or machine shops and the constant jar of machinery are probably the most offensive nuisances caused by manufacturing establishments. The constant pounding and hammering in inhabited neighborhoods during working hours is undoubtedly very annoying to any sick or nervous person. There is, nevertheless, no remedy save the removal of the offending establishment, which is practically impossible.

There are many other trades which are carried on with much noise, yet it is impossible to interfere with the methods resorted to by multitudes of poor people in earning their living to secure quietness on our streets.

Digitized by Google

In almost every manufacturing establishment of to-day, much annoyance is caused by the dust that is generated. In many establishments, this dust is very deleterious to the health of the employees. For the protection of the workmen, the work should be conducted as far as possible under large hoods connecting with an exhaust fan. The entire air of the room should be changed frequently by the aid of a fan or a spray condenser and a chimney.

The sanitary conditions of a town and city depend to a large extent upon the alertness of the local board of health. When a nuisance is found to exist which is dangerous to the public health, the party responsible should be immediately notified of its existence and requested to remove it. It is, however, by no means, a universal rule that notice is first to be given. The security of lives and property may sometimes require so speedy a remedy as not to allow time to call upon the person on whose premises the mischief has arisen to remove it. If a notice has been given and after a reasonable time the request has not been complied with, an order should be issued, signed by the local board of health, demanding that the nuisance be abated within a certain time. If this notice is not complied with, the local board of health should cause the nuisance to be abated and the expense collected from the owner of the property the same as any lawful tax against said property.

The aim of the State Board of Health and the local board of health should be to create a strong sentiment among the people for raising the standard of sanitation. Unless the same public opinion which is instrumental in putting the health laws upon our statute books is willing to stand for their enforcement, we cannot expect to realize the highest degree of cooperation between the health officials and the general public, a coöperation which is absolutely essential if we are to make progress in abating nuisances and elevating the standard of sanitation.

DISCUSSION.

Dr. H. E. Somers.

Fortunately for me Dr. Darling has told us what a nuisance is and he has told you how they may be removed. It seems to me, however, that there is a great deal of doubt just how the state of Vermont interprets the term nuisance. Anything may or may not be a nuisance according to the circumstances. Suppose a neighbor of yours has a ravine or embankment adjacent to your property which he is very desirous of filling up. He has dumped in there all sorts of rubbish, empty cans, etc. It presents a view in front of your parlor window which is objectionable to your wife and family. Is this a nuisance or not? Of course if these cans contain particles of food which are decomposing and causing sickness, it is, without question, a nuisance, but suppose they are dry, empty cans, is it then a nuisance? I find that oftentimes the health officer is called upon to remove nuisances and after his arrival he finds the complaint was unwarranted as the trouble was not so much a nuisance in itself as a feeling of animosity which existed

Digitized by Google

between the complainant and his neighbor. I was called over the telephone about ten days ago by a man who said there were dead sheep adjacent to his buildings which were decomposing and making life unbearable for him. I went there immediately, and what did I find? I found he had three sheep killed by dogs a month or six weeks before. He had called on the selectmen to settle the damages; they did, but he considered the award insufficient. He became angry and decided to get even with them by calling on me to abate the nuisance and charge the expense up to the town. The sheep were about one mile away from his buildings where they could not possibly have been a nuisance to any one. In this case, as in many others, I was obliged to make unnecessary expense to the town. We ought to insist more upon having our complaints sent in in writing and in some cases I think we would be justified in demanding some proof that there is a nuisance before we make our towns unnecessary expense.

M. P. Stanley, M. D.

It is surprising sometimes to note the large number of nuisances which spring up as soon as a man takes the office of health officer, and it is equally surprising sometimes to know what a nuisance is, especially if it is located on somebody's else land. I was appointed health officer last March, although some years ago I did the work for other parties for some time. I have since my term of office, received many complaints, some having merits, others not. I have received many complaints regarding the sewage of our town. The main trouble seems to be that the main pipe is too small. There is fifteen-inch pipe where it ought to be twenty-four. A lady came to me and said that after every hard storm the water would back into her cellar. I said there must be some trouble with the plumbing, but she did not know. I went there and found there was not a single watertight trap where it was designed for a seat or set tub. In regard to the water supplies, I will say we have an excellent water supply in the town of Hartford. So far as I know every report from the Laboratory of Hygiene has come back, "Water O. K." It comes away back three or four miles on the hills. I have had considerable trouble with the tenement houses, especially where there were Polanders and Italians. This was especially true of a building in which there were about forty people and where two or three sink drains from five sinks have been emptying into the cellar. I suppose the cesspool is plugged up. The selectmen gave me an order for the abatement and I ordered the owner of the building to commence to connect with the sewer by a certain date. The date passed and he did nothing. I notified the state's attorney, who took the matter up. The owner wrote the state's attorney that the health officer was a new man and was trying to make a lot of noise. The matter rested there. I saw the place before I left and nothing had been done, but I shall see to it immediately upon my arrival home. One of the principal nuisances is the disposal of refuse and vegetable matter. Last spring, March or April, a man came to me and said there was a dead hog

Digitized by Google

on the bank of the Connecticut river. I made a quiet investigation and found out that between thirty and forty hogs had died from some disease during the winter time. I found out who left the hog there and asked him if he would not attend to it and he did. Another thing is the sanitation of schoolhouses and nuisances about school buildings. I am on the school board in my town and the other two school directors have co-operated with me in making necessary changes in the plumbing and placing the schoolhouses in a sanitary condition.

Some people have a peculiar way of abating a nuisance. We had a house in Hartford which was reported. The flushing closet was conveyed into a bank not more than 100 feet from the main street. All the neighbors wanted it connected up with the sewer. I wrote to the owner and told him that we were doing all we could to have buildings connected and we would like to have him do so. He wrote back that he was surprised that I had declared it a nuisance as it had been in use for a great many years. I quoted a section of the law to him. He said he was trying to sell the house and if he could not sell it, he would connect within a reasonable time. I gave him until the first of July. He gave orders for the tenant to vacate the house, giving up his monthly rental for mere stubbornness. I apprehend there is some trouble in getting selectmen to work with the health officer. They are averse to spending any extra amount of money. I think by a little diplomatic coöperation, you can get them to do more. I find it is best not to antagonize a man when you want a nuisance abated. A little talk will do more sometimes than threats of legal procedure.

S. W. Butterfield.

Dr. Stanley spoke of the trouble that he had with the local board of health of his town. A year ago the secretary advised us to get leave from the local board of health to have the privilege of abating all nuisances. I went home and asked them to delegate to me all the rights that devolved upon them. This they did with this proviso—it was to continue during my good behavior. One question I would like to ask is with regard to my duty in my town where a dozen or more sewers come out at a little decline at the bottom of which is the road. There has been some complaint. What shall I do? If we should order those sewers run down to the river we would make trouble for Springfield, which is only five miles below. They cut ice from this river in Springfield and of course this would not be right and you can readily see what trouble I would get in if I attempted to do anything of that nature. I am in a quandary to know just what my duty is there. I received an anonymous letter stating that "near my house is a barrel containing a quantity of refuse which is foul smelling, which must be removed." Shall I go and investigate anonymous letters?

Dr. H. A. Elliott.

Mr. President and Health Officers—I am very much pleased with the

Digitized by Google

paper and remarks of our chairman, Dr. Caverly, especially that relative to the action of the local board in caring for nuisances.

I never attempt to abate a nuisance without first calling the attention of the board to the offending thing, and if abatement or destruction is the decision, then we prepare a paper describing the noxious substance, giving the number of statute under which the board acts in the case, and by authority thus given, declaring it a nuisance, ordering its destruction, removal or abatement within a certain specified time. This order signed by every one of the board is forwarded to the person or corporation owning or harboring such a nuisance, never to a tenant. A true copy of this order must be kept on file by the secretary as well as a complete record of the meeting resulting in the above order, because if the offender should fail to comply with its injunctions, then you will need all such data in prosecuting. It is in the hands of the local board. Long ago we became discouraged in applying to lawyers and state's attorneys for help in such matters. We find they are as a rule, disinterested politicians and ignorant of the unique powers of this board under the health laws of Vermont.

For instance, there existed for two years the ruins of a hotel deserving the name of nuisance, though not considered dangerous to public health. Unbeknown to me one of our board sought legal advice concerning its removal, it being a nuisance, and obtained the opinion that "it being private real estate we must not meddle." Soon after hearing such news, in writing our secretary, Dr. Holton, relative to other matters, we stated the case to him, receiving reply that it was a nuisance and could be handled by our local board. Gentlemen, I believe it. Before we had time to thresh the thing out, however, another party bought and removed the ruins. Believe me, nothing but harmony exists between me and each of our local board, but when these things occur I blame the secretary of our board, not the individual, for he has not received special training as we have who have attended these schools, and it should be a duty of the health officer to train him so that no mistakes be made.

Last May an order was issued in regular form by our board giving the owner of a house just twenty days to connect it with a town sewer. A little before the time expired this man applied to the chairman of the board of selectmen for extension of time; it was granted, without consulting others of local board. Why? Because the health officer had not instructed him along that line.

Mr. President, if it is impossible for a single member of a local board to issue a legal order for the destruction of a nuisance, so it is impossible for an individual member of that board to revoke or modify, in the least degree, that order.

Dr. C. F. Ball.

This subject just brought up has caused me a great deal of inconvenience. My question is: Does the state's attorney know? You can get as many different kinds of advice from as many lawyers as you consult. The advice

Digitized by Google

of the city attorney is somewhat different from that given by the state's attorney, consequently I have been in a dilemma. This spring we had a miserable nuisance which should have been abated within ten days, yet it was only two weeks ago that I was able to get it settled. I took the matter first to the city attorney. He spent three weeks in trying to get this person convinced that he was going to act. The neighborhood got wrathy. The man always had some excuse so time ran along and nothing was accomplished. It had run two months and I then said, We have got to get rid of this nuisance at once. The mayor and all had recognized it as such. Then the city attorney said we can not get rid of it under our city ordinance, but we will have to get rid of it under the state statutes. He drew up a special resolution covering the nuisance and I took it to the board of aldermen and asked them to vote on it. They said, If our city ordinance is not any good, we will lay it on the table for further consideration. In the meantime I told the man we were acting upon the matter. I simply usurped authority and in that way got the nuisance attended to. The nuisance was to get rid of some pigs and clean up the pigpen. He would not attend to it. Now how were we going to sell his property in order to abate that nuisance? The manure was on his land. It was his property so we could do nothing with it. The instructions given us are: Clean up nuisances and collect for the same. If we cleaned up this nuisance we should be obliged to sell his property. We, of course, have no right to sell a man's property. The state's attorney told us here at the last meeting to get this power of abating nuisances in general delegated to us by the local board of health. In looking up this matter I have found that we can not get such delegated power. We have got to have each nuisance voted upon separately by the local board of health before we can act.

Mr. H. L. Stillson.

Our friend here from Weathersfield is having some trouble with the disposal of the sewage from his town. In North Benington, an incorporated village where there is no sewerage system, one of the hotels has a soil pipe which is run down from the house into the street, below frost, into a settling basin. First, dig a circular hole,—size, a question of judgment,—wall and cement it; make it watertight. The sewage from this house runs into that settling basin, both inlet and outlet are at the top, and it runs clear water on the other side. This one in North Bennington has been in operation nine years last April and it has not troubled anyone. Another in the same village was once opened and only about a foot of substance like fine dust was found, after some thirty years' use.

W. L. Havens, M. D.

Are the sides cemented?

Mr. H. L. Stillson.

The whole basin is cemented.

Digitized by Google

F. Fletcher.

Did I understand you to say it had never been cleaned out?

Mr. H. L. Stillson.

It has not. The benefit of such a basin is that the noxious part does not get into the earth and pollute the supplies below.

W. L. Havens, M. D.

You trap into it?

Mr. H. L. Stillson.

Just as you would into a sewer. The size of the "settling basin" depends upon the amount of sewage you have to run into it. This was for a hotel. The "settling basin" is under the band stand. It went in nine years ago and it has worked very satisfactorily ever since. The outlet is nearly under one of the parlor windows of one of the best houses in the village and there never has been a word said against it. My advice is, avoid litigation.

G. B. Hatch.

There is a mill pond where the ice is removed for refrigerator purposes for meat markets, etc. Several private sewers run into this pond. Is it proper to allow the cutting of that ice?

Dr. C. S. Caverly.

Has that ice been analyzed?

G. B. Hatch.

Once.

Dr. C. S. Caverly.

Have the ice analyzed and if it is not safe for drinking purposes, condemn it.

Dr. C. S. Caverly.

Some of the older members of this school will remember an address given by Colonel Baker of Rutland that covered the question of how nuisances should be abated more thoroughly than any which I recall since that time. He told you that the local boards of health had as much authority, almost, as the Czar. I think you gentlemen, in getting at the subject of the ways and means of abating a nuisance and interpreting what they are, should study the law itself. Mr. Butterfield has asked the question whether a certain thing is a nuisance. That is for the local board to determine. Nobody else can decide that. You in your respective towns can decide those things with the other members of the local board of health. The law specifies that the local board of health has certain authority. For instance it may abate

Digitized by Google

all nuisances. The *health officer* shall make sanitary inspections whenever and wherever he has reason to suspect that anything exists which may be detrimental to the public health. The local health officer alone has no authority except as to the investigation. The full local board of health should take the initiative in the matter of abatement of nuisances. How are you going to show any court of justice that you have that authority? The only way would be to have a record of the meeting of the local board in which you were given the authority to act for them in regard to the abatement of each individual nuisance. I have noticed by the recent reports of health officers that the local boards of health are meeting oftener than they ever did before. You, as health officers, can advise and use moral suasion; you can appeal to the decency of people to abate nuisances, but you have no authority to serve a notice for the abatement of any kind of a nuisance unless you can show that you have been authorized to do this by your local board of health. The full local board has the authority and can abate a nuisance in any way it sees fit. After a particular condition has been deemed a nuisance by the full local board of health and the notice of abatement has been served, if the nuisance is not then taken care of, as secretary of the local board you can order it done and collect the expense of such work of the person or corporation liable therefor. You, as health officers, have only the power to investigate or inspect. The abatement must be the action of the full local board.

Dr. H. A. Elliott.

We always get such a diversity of opinion that I hardly know where we are. Last year we had a nuisance. The selectmen consulted a lawyer and the lawyer said that it was a private affair and the board had no right whatever to interfere with that partly burned-down building. I wrote to our secretary, Dr. Holton, and he said it was not only unsightly, but those burned walls might fall upon some one passing and should be considered a public nuisance. There is a little friction between our state's attorneys and the State Board of Health. Some one needs instruction, either the state's attorney or the State Board of Health.

Dr. C. S. Caverly.

Please make a minute of your questions and present them to the legal adviser who will be here to-morrow.

Dr. H. D. Holton.

I want to say a word on this subject as to what a nuisance is. Dr. Darling has defined it very well. A nuisance is anything that interferes with the use of a man's property or his rights, not only dangerous to public health, but offensive to the senses and annoying to the rights which each one has. Keep it in mind that a nuisance has not got to be detrimental to public health. The doctor spoke of the cans being emptied into the ravine. They probably gave some odor, but the sight being unpleasant warrants the right of

Digitized by Google

abatement. You get your fees for inspecting a supposed nuisance and you have got to get the facts yourself; you have got to collect the evidence. If the party does not abate the nuisance after notice from you to do so, you must call the attention of your state's attorney to the matter and if he does nothing with it, then just write to the attorney general. You must personally examine every complaint that is made to you. It is not sufficient that you are sure there has been a quarrel which calls for this complaint, but you must go after the complaint has been made to you and you must investigate it. I have traveled many extra miles and found it a neighborhood quarrel and there was nothing to the matter, but the health officer is obliged to examine every complaint made to him. He is not to blame for the complaint and this should be plainly stated to the party when you go to make your examination. Just tell them you have got to make this examination or you will be subject to a severe penalty. You have got to perform the duties presented to you just as the sheriff has to do his duty.

Digitized by Google

PRACTICAL PHASES OF LABORATORY WORK.

By B. H. Stone, Director of the Laboratory of Hygiene, Burlington.

The sphere of the hygienic laboratory in the sanitary system of the state is so well known that it hardly seems worth while to discuss it in this meeting. Starting from a very humble and uncertain beginning ten years ago, our institution, like the Health Officers' conference, has come to be recognized as indispensable to the best interests of the state. It is one of those innovations made necessary by the increasing age of the country and consequent pollution of the soil, the growth of population and its segregation in the cities, the greater facilities for and consequent increase in travel, and lastly the development in the knowledge of the etiology of disease and methods of prevention. Laboratories are as much a necessity to the sanitary improvement of the country as factories and railways are to its commercial development.

The human mind is always groping for definite results and any method or system which holds forth a promise of such fulfilment in any line is always eagerly accepted, oftentimes by enthusiasts, before the methods have had the benefits of thorough proof. Particularly is this true of medicine. New medical, surgical and diagnostic measures have always been hailed with great avidity, by the laity particularly, but also by a large proportion of the medical profession. Too many times, alas, the utter fallacy of these methods has later been made plain. Thus laboratory methods were eagerly accepted as giving a ready and exact solution of many problems which had always been puzzling. Such institutions have been in operation now such a length of time that a better estimation of their accomplishments can be made than was possible ten years ago. Now we are in a position to weigh carefully the evidence for and against laboratory methods and see wherein, if at all, they have been found wanting.

In the diagnosis of diphtheria, we find that the clinical and bacterial results are at variance almost as often as they agree. In 2560 specimens diagnosed as diphtheria by laboratory examination, 248 were not so diagnosed by clinical examinations. Who was right in these 248 cases of discrepancy? Investigations have shown that many times infection caused by the diphtheria bacillus may be very slight in the individual owing to some personal peculiarity of immunity, and even farther, diphtheria bacilli are found in a certain proportion (about 1 per cent) of apparently healthy throats. Clinically these individuals do not have diphtheria, yet from a sanitary standpoint they are as truly infected as the most severe case. The fact that they are not susceptible, interferes in no way with the virulence of the germs for others. Indeed, these cases, owing to the fact that their wanderings are not

Digitized by Google

interfered with by illness, are more apt to disseminate the disease than is an individual who is really sick. Furthermore, these individuals are a menace to themselves as some temporary exposure or loss of tone may interfere with this immunity which protects them from the severe manifestations of the disease. Many of these cases will, of course, go undetected, as ordinarily only those with suspicious throats are subjected to bacteriological examination. The problem of the complete eradication of diphtheria is largely the problem of these ambulatory cases. Whether or no it is morally justifiable or legally possible to quarantine a perfectly healthy individual who chances to be carrying diphtheria bacilli in his or her throat, is not a question which I care to discuss. It would raise a similar but more difficult question with regard to those infected with the germ of lobar pneumonia (20 per cent of all healthy individuals). Thus we see that both clinician and laboratory may be correct in these apparently discordant cases, depending entirely upon the view point. Disease has long been diagnosed by clinical symptoms (results) rather than etiology (cause). The latter is unquestionably the most scientific way, but will probably never entirely replace the old system. From the point of view of the health officer, diphtheria should certainly mean infection with diphtheria bacilli, be the clinical symptoms more or less, and recovery should mean a complete disappearance of the infecting organism from the throat. The best method we have at present of determining the latter fact is to secure two consecutive negative cultures taken from nose and throat. That the second negative is a precautionary measure of value is evident from the fact that in many cases, a positive result may follow a negative. Even with two negative cultures, unless taken with great care, it is probable that many cases are released while a few organisms are still lurking in the throat.

Thus in the examination of specimens of sputum for tubercle bacilli results are often obtained which surprise or disappoint the sender. This surprise is more often at negative than positive results. A little consideration of the pathology of tuberculosis, ought, however, to make one anticipate just this result. Tubercle bacilli infecting the lungs whether by way of respiratory or digestive tract finally reach their resting place and lead to proliferation, nodule formation, and ultimate necrosis in the framework of the lung and not on the epithelial surfaces. In the tubercle thus formed, the bacilli lie firmly embedded and it is only when such a growth has invaded an air vesicle and become broken down, usually as a result of secondary infection, with the beginning of cavity formation, that tubercle bacilli are found in the sputum. Provided the infection is a fairly general one, the patient may present many of the clinical signs characteristic of the disease before bacilli are found and on the other hand, one small tubercle may go on to ulceration and tubercle bacilli be found in the sputum at times, long before physical signs are definite. When we consider the great expanse of mucous surface in the lungs and bronchii and realize that there is some normal desquamation and secretion from this surface all of the time and then in comparison with this, consider the relatively small amount of lung structure usually in process of ulceration,

Digitized by Google

it is not at all surprising that a tubercular individual often expectorates considerable quantities of sputum which is germ free. On the other hand the possibility of finding tubercle bacilli in the sputum of normal indivduals is so very small indeed that it is safe to consider it as a negligible accident.

The interpretation of results of a water examination is perhaps the most puzzling of all to one who is not thoroughly conversant with the methods of analysis, and the Laboratory is often criticised for not saying flatly that a water is or is not fit to drink. This can occasionally be done when dangerous bacteria are found, but more often the character of a water must be decided by the analyst, not by finding present anything which is actually detrimental but by detecting a chemical constituent or a series of chemical constituents perfectly harmless in themselves which under certain conditions surely indicate certain things. Unfortunately a knowledge of the conditions which make certain the interpretation of these findings, is more often than not denied the analyst and consequently his inferences must be guarded. For instance, two wells may be situated within the drainage area of an old and unused barn yard and a constantly used water-closet respectively and both show exactly the same conditions as far as analytical results go, i.e. a like amount of sodium chloride and nitrogen in the form of nitrates. A knowledge of these conditions together with the chemical picture would immediately indicate much danger in the one case and very little in the other. This interpretation would be still farther modified by a knowledge of the distance, the character of the soil, the possibilities of surface overflow, etc. Thus under different conditions, the same chemical results may indicate widely different things. The chemist wishes to know these facts, not as is sometimes suggested, to govern his results, which would be the same in any case, but that he may intelligently interpret their meaning. He has no right to do this without all the knowledge of local conditions ascertainable.

For this reason we are very anxious to obtain all the facts possible regarding the public supplies in this state and if there are such other than those whose description has been published in our reports and bulletins, we should be very much gratified to have you give us as much information regarding these supplies as possible before you return.

Other lines of our work might be taken up in the same way but it would be practically a repetition of what I have already said. Enough has been cited to illustrate the point which I wish to emphasize; that laboratory results should be interpreted in the light of all the other facts about the problem which are ascertainable. Positive results when they can be reached by such examinations are as nearly positive as anything can be and from the sanitarian point of view, can be accepted as absolute. But negative findings should simply take their place with the other ascertainable facts and be weighed together with everything else in making the final judgment. Taken in this way, laboratory results have not been found wanting. They supply an important place filled in no other way and are often of sufficient importance to overshadow all else in the solution of the problem.

Digitized by Google

DISCUSSION.

Thomas H. Hack, M. D.

In the few moments allotted to me for the discussion of this paper on "Practical Phases of Laboratory Work," which we have all listened to with much pleasure and interest, I can perhaps make no better use of the time than to tell you of a few of the many instances in which the work of the state Laboratory has been of practical use to me.

Perhaps there is no greater field to-day than that of preventive medicine. And whatever helps us to prevent disease or helps to show us where disease comes from is practical. For thereby it enables us to stamp out disease or to prevent its recurrence.

One of the greatest helps that we get from the Laboratory is the proving or disproving the presence of diphtheria bacilli in a given case. I find it a good routine method to send cultures of all cases of tonsilitis where there are children in the family, where the disease attacks more than one member of the family at a time, and of course, those cases where we are uncertain of the diagnosis. Occasionally I have been surprised to get a positive report from a case that has practically recovered by the time the report is received. But had that case gone about—as it surely would have done had no culture been sent—with the bacilli in the throat, other cases would very likely have occurred. To speak of a case in point. An infant died of what the physician in charge diagnosed as membranous croup, although the culture from the child's throat was negative. There were six other children in the family—four of them attending school at the time. Cultures fom the throat of each child were sent to Burlington. All were returned negative except that fom the throat of the eldest, a girl of eleven, who had spent much of her time out of school hours in taking care of the baby. There was no evidence of throat trouble in the girl, and she seemed to be perfectly well. Yet her throat contained diphtheria germs from which I have no doubt the baby became infected and died. The work of the Laboratory in this case probably helped us to prevent the further spread of the disease, and certainly gave us knowledge that we could not have possessed without its aid.

I will pass over the sputum analyses and the typhoid tests, in which practical aid from the Laboratory is too well known to us to require comment, by just asking you if you have not breathed a little easier when your puzzling case was shown to have the germs of tuberculosis or the blood reacted to the Widal test, and I will say just a few words about what the Laboratory has done for us in Proctor, in bettering our milk supply. Two years ago our milk dealers were selling their milk from large cans placed in open wagons. Both were encrusted with the filth and deposit of seasons gone by. Now at the present time our milk is brought around to customers in clean milk cans or bottles which are inside of clean, covered milk carts. Formerly the milk contained excrement, hairs, dust or anything that came its way. Now for the last six months, with now and then an exception, the Labora-

Digitized by Google

tory has found our milk to be normal. Our butter maker instead of catching two handfuls of dirt in his separator each morning tells me that he now gets none or less than a teaspoonful at the most. There was formerly a large number of cases of bowel trouble among our bottle-fed infants. One consultant that I had on a case of a sick child with entero-colitis, when I asked him why it was that we seemed to have so many cases of that kind of trouble in our town, said that he believed it was because we were in a sort of valley and that the air was not so healthful as in a town where the country was more open. Since our milk has become good our air is better, and cases of bowel trouble in infants are much less frequent.

Now, to my mind, all this goes to show that these examinations of cultures, analyses of sputum, tests for typhoid and malaria, and examinations of our milk and water supplies made by the Laboratory are eminently practical to us as physicians and health officers as well as to the people of Vermont.

Digitized by Google

SPECIMENS EXAMINED AT LABORATORY OF HYGIENE DURING FIRST QUARTER, JANUARY, FEBRUARY AND MARCH, 1909.

Water.

Ground Waters:		
Normal	40	
Showing present pollution	11	
Showing past pollution	17	
Showing past and present pollution	17	
Surface Waters:		
Normal	22	
Polluted	3	
Total		110

Sputum for Tubercle Bacilli.

Male:		
Positive	53	
Negative	148	
Female:		
Positive	30	
Negative	124	
Sex not stated:		
Positive	3	
Negative	15	
Total		373

Cultures for Diphtheria Bacilli.

Positive	60	
Negative	696	
Suspicious	3	
Total		759

Blood for Widal Reaction.

Positive	25	
Negative	134	
Total		159

Blood for Malaria.

Positive		
Negative	4	
Total		4

Digitized by Google

MILK AND CREAM.

Above standard	56	
Below standard	43	
Total (Detail table following)		99

FOODS.

Legal	79	
Adulterated or misbranded	6	
Total (Detail table following)		85

DRUGS.

Adulterated	1	
Total		1

LIQUOR FOR LICENSE COMMISSIONERS.

Standard	5	
Below standard	8	
No standard	6	
Total		19

Medico-legal cases (Detail table following)	56

MISCELLANEOUS ANALYSES.

Positive	54	
Negative	93	
Total		147
Total number of examinations made		1812

Digitized by Google

Lab'y Number	Date	Obtained From	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
66177	1-26-09	Mrs. F. X. Saitus.	Burlington.....	12.5	9.5	3.0	.....	Low in fat.
66185	"	J. J. Childs.....	"	13.2	9.95	3.25	Dirty.....	Barely conforms in fat.
66187	"	E. J. Viens.....	"	12.3	9.5	2.8	.....	Low in fat.
66297	1-29-09	—— Grover.....	Bennington.....	11.69	8.99	2.7	Refractometer 41.9. Low in fat.....	
66366	2- 3-09	M. Gervice.....	Charlotte	13.1	9.0	4.1	Very dirty, and bad odor.....	
66367	"	W. H. McNeil.....	"	12.1	8.85	3.25	Refractometer 39.5. Dirty.....	
66368	"	Arthur Mann.....	"	13.0	9.0	4.0	Very dirty.....	
66369	"	F. B. Smith.....	"	12.1	8.7	3.4	Dirty, and smells of stable.....	
66370	"	Lyman Steady....	"	13.7	9.3	4.4	" " " "	From W. W. Beach, Lake View Creamery, Charlotte.
66371	"	L. B. McNeil.....	"	12.6	9.2	3.4	Dirty. Contains hairs.....	
66372	"	Myers & Wooster.	"	14.9	9.9	5.0	Dirty. Excellent chemically, but not properly handled.....	
66375	"	Both & Bissette...	"	12.8	9.0	3.8	Extremely dirty, and bad odor.....	
66376	"	J. L. Whalley.....	"	13.3	9.2	4.1	Dirty. Hairs in sediment.....	
66377	"	James Murphy....	"	13.1	9.6	3.5	Dirty, and bad odor.....	
66589	2-11-09	—— Fox.....	Rutland.....	10.72	8.92	1.8	Refractometer 41.2.....	Skimmed.
66596	2- 9-09	J. H. Douglass....	Essex Junction.	12.5	8.5	4.0	Dirty.....	
67177	3-10-09	A. M. Wheeler....	Colchester	13.5	9.3	4.2	"	
67178	"	B. H. Carpenter..	"	14.4	9.6	4.8	"	
67179	"	E. J. Mayo.....	"	12.6	9.0	3.6	"	
67180	"	G. Parriseau.....	"	13.0	9.4	3.6	"	
67181	"	B. E. Corey.....	"	13.2	9.2	4.0	"	
67183	"	Oliver Parriseau..	"	12.6	9.0	3.6	"	
67667	"	W. C. Bombard...	"	Cream		23.0	"	
67669	"	Mrs. Seth Carey..	"	12.6	9.0	3.6	"	
67670	"	S. Morrow	"	12.7	9.0	3.7	"	
67934	4- 7-09	A.....	Windsor	14.14	9.04	5.1	"	
67968	"	E.....	"	14.27	9.27	5.0	"	
68055	4- 9-09	C. J. Munn.....	Johnson	13.6	9.5	4.1	"	
68056	"	J. Addell.....	"	15.1	9.9	5.2	"	
68058	"	E. E. Holmes.....	"	13.5	9.3	4.2	"	
68059	"	B. A. Hunt.....	"	13.9	9.5	4.4	"	
68060	"	Homer Peck.....	"	14.7	9.9	4.8	"	
68061	"	Morris S. Hill	"	13.3	9.3	4.0	"	
68057	"	E. T. Fullington..	"	11.75	9.15	2.6	"	Low in fat.
68361	4-19-09	Hawley & Torrey	Rockingham ...	11.42	8.17	3.25	Refractometer 39.9. Normal.....	Poor quality. Fenn, producer.
68366	"	" " "	" ...	12.8	8.6	4.2	Dirty.....	G. N. Chamberlain, producer.
68369	"	C. B. Hurnes.....	" ...	11.48	8.50	2.98	Normal	Peabody & Kendall, producers. Low in fat.
68372	"	C. H. Spaulding..	" ...	12.1	8.5	3.6	Dirty.....	W. B. Smith.
68742	4-30-09	Tom Butler.....	Healdville	10.29	7.9	2.2	Refractometer 36.0. Dirty.....	Contains added water.
68655	4-28-09	C. E. Allen.....	Rockingham....	14.2	9.6	4.6	Dirty.....	
68656	"	H. Whitten	"	13.5	9.3	4.2	"	
68657	"	Hawley & Torrey	"	12.9	9.2	3.7	"	F. S. Kimball, producer.
68658	"	G. W. Peck.....	"	13.8	9.4	4.4	"	H. Wood, "

43 Specimens.

Digitized by Google

MILK—STANDARD OR ABOVE.

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
66155	1-26-09	Baker & Tupper	Burlington	14.4	9.8	4.6	Clean	
66156	"	E. C. Bordo	"	13.3	9.5	3.8	"	
66157	"	H. B. Chittenden	"	14.1	9.7	4.4	"	
66158	"	C. C. Bliss	"	13.3	9.4	3.9	"	
66159	"	Steele & Butler	"	13.1	9.3	3.8	"	
66160	"	L. E. Haynes	"	14.5	9.8	4.7	"	
66161	"	River View Farm	"	13.2	9.2	4.0	"	
66162	"	J. G. G Downing	"	15.0	10.0	5.0	"	
66163	"	J. B. Ritchie	"	13.5	9.7	3.8	"	
66164	"	I. E. Chase	"	13.5	9.5	4.0	"	
66176	"	P. Bushey	"	13.9	9.4	4.5	"	
66178	"	D. J. Millham	"	13.9	9.7	4.2	"	
66179	"	C. E. Barber	"	12.9	9.4	3.5	"	
66180	"	I. P. Welch	"	13.6	10.0	3.6	"	
66181	"	I. H. Buck	"	13.7	9.5	4.2	"	
66182	"	Bostwick Bros	"	13.9	9.6	4.3	"	
66183	"	Jerry O'Brien	"	13.3	9.6	3.7	"	
66184	"	H. A. Bixby	"	13.9	9.7	4.2	"	
66186	"	River View Farm—Goodrich	"	14.1	9.8	4.3	"	
66188	"	W. C. Hoag	"	12.70	9.45	3.25	"	Barely conforms in fat.
66189	"	Wm Suckstorff	"	13.1	9.6	3.5	"	
66190	"	F. L. Murray	"	13.8	9.7	4.1	"	
66191	"	T. Ryan	"	14.8	9.5	5.3	"	
66192	"	H. H. Wheeler	"	13.7	9.5	4.2	"	
66193	"	C. K. Tyler	"	13.6	9.6	4.0	"	
66373	2-8-09	W. Spear	Charlotte	Cream		33.0	"	Passable, but some foreign odor.
66430	2-5-09	W. H. Deary	Enosburg Falls.	15.5	9.9	5.6	"	
66429	"	F. W Draper	"	13.2	9.4	3.8	"	
66431	"	David Ames & H. A. Crampton	"	13.1	9.1	4.0	"	
66432	"	Stratton & Vincent	"	12.6	9.0	3.6	Refractometer 40.7	Clean
66433	"	Geo. Nichols	"	13.9	9.7	4.2	" 43.5	"
66434	"	D. E. Woodward	"	14.3	10.0	4.3	" 43.5	"
66435	"	C. P. Phelps	Berkshire	13.5	9.3	4.2	" 41.8	"
66436	"	Ed. Mosier	"	12.7	9.1	3.6	" 41.2	"
66437	"	G. H. Pomeroy	Franklin	13.3	9.2	4.1	" 42.5	"
66438	"	E. H. Burleson	Fairfield	12.9	9.3	3.6	" 43.0	"
66439	"	F. Raine	"	13.7	9.6	4.1	" 43.5	"
66590	2-11-09	Fox	Rutland	12.61	8.71	3.9	" 41.3	"
66523	2-9-09	D. M. Johnson	Essex Junction.	13.5	9.4	4.1	Clean	

Collected by Federal Packing Co., Enosburg Falls.

Digitized by Google

Milk—Standard or Above (Continued).

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
66525	2- 9-09	W. R. Place	Essex Junction.	12.8	8.8	4.0	Clean	
66528	"	H. B. Teachout	"	14.0	9.2	4.8	"	
66879	2-24-09	D. M. Johnson	"	13.2	9.1	4.1	"	Morning milk.
66880	"	"	"	13.1	9.1	4.0	"	Night milk.
67363	3-17-09	F. E. Alexander	Proctor	12.5	8.8	3.7	"	
67364	"	J. Stone	"	13.5	9.4	4.1	"	
67365	"	Ed. Kilburn	"	13.3	9.3	4.0	"	
67366	"	C. Ladabouche	"	13.6	9.5	4.1	"	
67367	"	R. C. Meade Estate	"	12.9	9.4	3.5	"	Night milk
67368	"	B. Hier Estate	"	13.9	9.5	4.4	"	
67369	"	W. R. Sharp	"	12.5	8.9	3.6	"	
67370	"	N. Spear Estate	"	13.2	9.6	3.6	"	
67371	"	Wm Fox	"	13.0	9.4	3.6	"	
67372	"	R. C. Meade Estate	"	13.5	9.5	4.0	"	Morning milk.
67373	"	Jos. Henry	"	12.00	8.75	3.25	"	Barely Passable,
67374	"	J. B. Turner	"	13.0	9.4	3.6	"	
67474	3-22-09	C. S. Van Sanford	Bennington	13.1	9.3	3.8	"	

Digitized by Google

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer.	Legal	Adulterated	Misbranded	Remarks
65638	1- 1-09	Milk	Submitted by E. A. Spear, Woodstock		1			Total solids 13.8. Not fat 9.7. Fat 4.1. No sediment.
66002	1-16-09	Pork	J. H. Wilcox, Starksboro		1			Normal.
66003	"	"	J. Fitzsimmons, Bristol		1			"
66046	1-18-09	Cream	Submitted by A. C. Stafford, Burlington		1			Fat 35.5 per cent.
66067	1-19-09	"	" " I. E. Chase, Burlington		1			" 35.0 "
66068	"	"	" " " "		1			" 50.0 "
66064	"	Milk	" " L. A. Bissonette, Burlington		1			Total solids 13.1. Not fat 9.3. Fat 3.8.
65130	12-21-08	"	" " L. E. Haynes, Burlington		1			" " 16.0. " " 9.8. " 6.2. Bacteria 5000 per cc.
65131	"	"	" " " "		1			Total solids 15.6. Not fat 10.0. Fat 5.6.
65132	"	"	" " " "		1			" " 14.0. " " 9.8. " 4.2. Bacteria 920,000 per cc.
65133	"	"	" " " "		1			Total solids 14.0. Not fat 9.8. Fat 4.2.
66199	1-26-09	"	" " W. B. Sheldon, Bennington		1			" " 13.7. " " 9.6. " 4.1.
66200	"	"	" " " "		1			" " 13 9. " " 9.6. " 4 3.
66374	2- 3-09	Cream	" " W. W. Beach, Charlotte—Lake View Creamery		1			Fat 43.0. Passable, but some odor.
66758	2-18-09	Milk	Submitted by C. C. Bliss, Burlington		1			Solids 14.4. Solids not fat 9.6. Fat 4.8. Bacteria 20,000 per cc. Submitted.
66642	2-14-09	Nu Bru (non-alcoholic beverage)	E D. Keyes & Co., Rutland	Ind. Brewing Co., Pittsburgh	1			Alcohol .45 per cent.
66856	2-24-09	Milk	Submitted by M. Toohey, E. Wallingford		1			Solids 12.5. Not fat 8.9. Fat 3.6.
63163	10-13-08	Sausage Color	J. Kreis, Essex Junction			1		Illegal for use in meat. Contains coal tar dye.
63165	"	Frankfurters	" "				1	Colored with coal tar dye.
66909	2-27-09	Milk	Submitted by John Stewart, Burlington	John Stewart	1			Total solids 13.6. Solids not fat 9.6. Fat 4.0.
66910	"	"	" " " "	"	1			Total solids 13.9. Solids not fat 9.7. Fat 4.2.
66942	2-28-09	" No. 1	" " C. E. Lazell, White River Junction		1			Total solids 14.2. Solids not fat 9.6. Fat 4.6.
66943	"	Cream No. 2	Submitted by C. E. Lazell, White River Junction		1			Fat 34.0.
66944	"	Skim Milk No. 3	Submitted by C. E. Lazell, White River Junction		1			" .02.
66945	"	" " No. 4	Submitted by C. E. Lazell, White River Junction		1			" .07.
66492	12-24-08	Extract Vanilla	E. N. Northrup, Castleton	James Extract Co., New York			1	An imitation, artificially colored. Contains coumarin.

Digitized by Google

Foods (Continued)

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
66869	2-25-09	Milk	Submitted by Eddie Conely, North Duxbury		1			Total solids 13.7. Solids not fat 9.1. Fat 4.6.
66950	2-28-09	"	" " Dr. Geo Buxton, Proctorsville		1			Total solids 13.75. Solids not fat 9.35. Fat 4.6.
66999	3- 3-09	"	" " Sidney Warren, No. Williston		1			Total solids 17.09. Solids not fat 10.29. Fat 6.8. Quality excellent.
67095	3- 7-09	"	" " G. H. Farnsworth, Rutland		1			Leucocytes normal.
67096	"	"	" " " "		1			" "
67098	"	"	" " " "		1			" "
67099	"	"	" " " "		1			" "
67118	3- 8-09	Pork	" " F T Briggs, Bristol					No parasites found.
67152	3- 9-09	" No. 1	Dr. G. F. Edmunds, "					Trichina spiralis present.
67181	3-10-09	Milk	Submitted by I. E. Chase, Burlington		1			Total solids 12.5. Solids not fat 8.9. Fat 3.6.
67208	3-11-09	Cream	" " Maple Tree Sugar Co., Rutland		1			Fat 27.0 per cent.
67252	3-14-09	"	Submitted by Maple Tree Sugar Co., Rutland		1			" 35.0 "
67163	3-12-09	Milk	Submitted by E. J. Boyden, Montpelier		1			No typhoid bacilli found.
67164	"	"	" " " "		1			" " " "
67270	3-16-09	Pork	" " G. H. Dill, Beldens, Vt		1			No parasites found.
67286	3-17-09	Cream	" " Maple Tree Sugar Co., Rutland		1			Fat 50.0 per cent.
67406	3-20-09	"	Submitted by Maple Tree Sugar Co., Rutland		1			" about 45.0. Sour.
67447	3-22-09	"	Submitted by Maple Tree Sugar Co., Rutland		1			" " 42.0 "
67448	"	"	Submitted by Maple Tree Sugar Co., Rutland		1			" " 35.0. "
67466	"	Milk	Submitted by F. X Saltus, Burlington			1		Low in fat (2.8).
67516	3-24-09	Cream	" " Paul Parot, Winooski		1			Fat 22.0.
67554	"	Milk	" " Grover McGaughey, S. Burlington		1			Total solids 14.6. Not fat 9.4. Fat 5.2.
67622	3-26-09	Cream	Submitted by Maple Tree Sugar Co., Rutland		1			Fat 44.5.
67655	3-27-09	"	Submitted by Maple Tree Sugar Co., Rutland		1			" 26.0.
67689	3-30-09	Pork	Submitted by John Crowley, Starksboro		1			No parasites found.
67666	3-28-09	Cream	" " Maple Tree Sugar Co., Rutland		1			Fat 40.0.
67887	3-19-09	Ginger	Submitted by L. Colodny, Burlington		1			No adulteration detected.

Digitized by Google

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
67388	3-19-09	Black Pepper	Submitted by L. Colodny, Burlington		1			No adulteration detected.
67389	"	Cinnamon	" " " "		1			" " "
66861	2-24-09	Butter	" " J. A. Cockle, "		1			" " "
67786	4- 2-09	Ham	E. K. Eddy, Starksboro, Vt.		1			No parasites found.
64884	4- 6-09	Pork	S. S. Newton, E. Middlebury, Vt.		1			Normal. No parasites found.
67932	4- 7-09	Cream	Maple Tree Sugar Co., Rutland		1			Fat 32.
67933	"	Milk	Wallace Batchelder, Bethel			1		Total solids 10.66. Fat 1.8
67875	4- 5-09	Cream	Maple Tree Sugar Co., Rutland		1			Fat 36.
67876	"	"	" " " " "		1			" 50.
67877	"	Milk	" " " " "		1			" 3.6.
66900	2-26-09	Candy	Submitted by Geo. H. Cross, St. Johnsbury		1			No adulteration detected.
68298	4-19-09	Cream	" " Maple Tree Sugar Co., Rutland		1			Fat 34.0.
68299	"	"	Submitted by Maple Tree Sugar Co., Rutland		1			" 38.0.
68300	"	"	Submitted by Maple Tree Sugar Co., Rutland		1			" 32.0.
68301	"	"	Submitted by Maple Tree Sugar Co , Rutland		1			" 26.0.
68302	"	"	Submitted by Maple Tree Sugar Co., Rutland		1			" 25.0.
68303	"	"	Submitted by Maple Tree Sugar Co., Rutland		1			" 25.0.
68304	"	"	Submitted by Maple Tree Sugar Co., Rutland		1			" 31.0.
68131	4-18-09	Milk	Submitted by Dr. C. S. Abell, Enosburg Falls		1			" 4.2.
68291	4-17-09	"	Submitted by F. C. Sanborn, New Haven		1			" 4.5. Total solids 14.5. Solids not fat 10.0.
68290	4-16-09	"	" " J. D. Brewster, Windsor		1			Fat 4.6. Total solids 13.46. Solids not fat 8.86.
68099	.....	Milk Powder	" " Geo. H. Cross, St. Johnsbury		1			Consists of desiccated skim milk. Fat after dilution .06 per cent.
68409	4-18-09	Cream	" " Maple Tree Sugar Co., Rutland					Decomposed.
68466	4-22-09	"	Submitted by Maple Tree Sugar Co., Rutland		1			Fat 30 0.
68348	4-20-09	Milk	Submitted by J. D. Brewster, Windsor		1			" 4.8. Total solids 14.4. Solids not fat 9.6.
67710	3-30-09	Cream of Tartar (bulk)	F. C. Clark, Brattleboro	Stickney & Poor, Boston	1			Pure.

Digitized by Google

Foods (Continued)

Laboratory Number	Date	Article	Dealer	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
68514	4-25-09	Milk	Submitted by E. W. Spencer, Bloomfield		1			Total solids 14.4. Solids not fat 9.4. Fat 5.0.
68493	4-27-09	Cream	" " Maple Tree Sugar Co., Rutland		1			Sour.
68693	4-28-09	Milk (E. Smith)	G. W. Peck, Rockingham		1			Broken when received.
67939	4- 7-09	Maple Sugar Wafers	Bacon Maple Sugar Camp, Forestdale		1			
68614	4-29-09	Milk	Submitted by Baker & Tupper, Burlington		1			Total solids 13.9. Solids not fat 9.4. Fat 4.5. Dirty.

Total Specimens, 85.

Digitized by Google

Medico-Legal Cases.

Specimens Examined by Order of Superior Court Judge or Attorney General, During Last Quarter 1908.

Laboratory Number	Date Received	Date Reported	Town	Material	Examined For	Results	Ordered by	State's Attorney
			Chittenden County					
61804	8-11-08	8-14-08	Burlington	Clothing	Spermatozoa	Negative	E. L. Waterman	A. L. Sherman
63949	10-26-08	10-27-08	"	Cider	Alcohol	4.85 per cent by volume	Seneca Hazelton	A. L. Sherman
61702	9- 9-08	9-12-08	Milton	Beer	Alcohol	.13 per cent by volume	E. L. Waterman	A. L. Sherman
61703	"	"	"	"	"	.66 per cent by volume	" "	" "
61704	"	"	"	"	"	.66 per cent by volume	" "	" "
61705	"	"	"	"	"	.53 per cent by volume	" "	" "
			Orleans County					
63617	9-23-08		Coventry	Cow's stomach	Poison	Negative	A. A. Hall	E. A. Cook
63502	10-31-08	11- 7-08	Newport	Tea	"	Case pending in Court	G. M. Powers	E. A. Cook
64986	12-16-08	12-22-08	Island Pond	Vomitus	"	Negative	W. H. Taylor	Geo. L. Hunt
64987	"	"	" "	Stomach washings	"	"	" "	" "

Total Specimens 10.

Digitized by Google

Medico-Legal Cases.

Specimens Examined by Order of Superior Court Judge or Attorney General, from January 1 to May 1, 1909.

Laboratory Number	Date Received	Date Reported	Town	Material	Examined For	Result	Ordered By	State's Attorney
			Addison County					
66069	1-19-09	2- 4-09	Vergennes	Ink stain	Identification of ink stains.	Case pending in Court	Zed Stanton	F. W. Tuttle
66070	"	"	"	Coat	" " "	" " " "	" "	" "
66258	"	"	"	Ink	" " "	" " " "	" "	" "
			Bennington County					
66830	2-23-09	3-10-09	Bennington	Meat	Poison	Negative	J. G. Sargent	W. T. Meagher
66831	"	"	"	"	"	"	" "	" "
			Caledonia County					
68313	4-18-09	4-19-09	St. Johnsbury	Jamaica ginger	Alcohol and extract	Case pending in Court	J. G. Sargent	R. W. Simonds
68314	"	"	"	"	" " "	" " " "	" "	" "
68315	"	"	"	"	" " "	" " " "	" "	" "
68316	"	"	"	"	" " "	" " " "	" "	" "
			Chittenden County					
68121	4-13-09	4-16-09	Westford	Autopsy	Cause of death	Acute nephritis	W. H. Taylor	H. B Shaw
			Franklin County					
67301	3-17-09	3-18-09	St. Albans	Wantastiquet Bitters	Alcoholic per cent	20.71 per cent by volume	A. A. Hall	Elmer Johnson
65134	12-21-08	3-31-09	"	Stomach	Poison	Negative	" "	" "
66540	1- 6-09	"	"	Kidneys	"	Arsenic present	" "	" "
66541	"	"	"	Liver	"	"	" "	" "
66542	"	"	"	Brain	"	"	" "	" "
66543	"	"	"	Spleen	"	"	" "	" "
66544	"	"	"	Intestines	"	"	" "	" "
66545	"	"	"	Urine	"	Negative	" "	" "
66546	"	"	"	Embalming fluid	Arsenic	Arsenic present	" "	" "
			Lamoille County					
66963	2-27-09	3- 2-09	Elmore	Autopsy	Cause of death	Shooting	J. G. Sargent	M. P. Maurice
66964	"	"	"	Urine	Alcohol	Positive	" "	" "
66965	"	"	"	Stomach contents	"	"	" "	" "

Digitized by Google

Laboratory Number	Date Received	Date Reported	Town	Material	Examined For	Result	Ordered By	State's Attorney
			RUTLAND COUNTY					
66546	2- 9-09	3-28-09	Benson	Cow's stomach	Poison	Case pending in Court	J. G. Sargent	J. C. Jones
66547	"	"	"	Cow's intestines	"	" " " "	" "	" "
68499	4-24-09	5- 4-09	Rutland	Cow's liver	Poison	Case pending in Court	J. G. Sargent	J. C. Jones
68500	"	"	"	" spleen	"	" " " "	" "	" "
68501	"	"	"	" stomach	"	" " " "	" "	" "
68503	"	"	"	" paunch	"	" " " "	" "	" "
68504	"	"	"	Mixed feed	"	" " " "	" "	" "
68505	"	"	"	Feces	"	" " " "	" "	" "
68506	"	"	"	Mixed feed	"	" " " "	" "	" "
68507	"	"	"	Paris green	"	" " " "	" "	" "
68508	"	"	"	Feed mixture	"	" " " "	" "	" "
68509	"	"	"	" "	"	" " " "	" "	" "
68510	"	"	"	" "	"	" " " "	" "	" "
	3- 8-09	3-10-09	W. Pawlet	Autopsy	Cause of death	Gun shot wounds	J. G. Sargent	J. C. Jones
			WINDHAM COUNTY					
67491	3-22-09	4-27-09	Brattleboro	Autopsy	Cause of death	Perforating duodenal ulcer	J. G. Sargent	J. B. Williams
67506	"	"	"	Stomach washings	Poison	Negative	" "	" "
67505	"	"	"	Urine	"	"	" "	" "
68504	"	"	"	Blood	"	"	" "	" "
67503	"	"	"	Esophagus and pharynx	"	"	" "	" "
67502	"	"	"	Spinal cord	"	"	" "	" "
67501	"	"	"	Spleen	"	"	" "	" "
67500	"	"	"	Left kidney	"	"	" "	" "
67499	"	"	"	Right kidney	"	"	" "	" "
67498	"	"	"	Liver	"	"	" "	" "
67497	"	"	"	Intestines	"	"	" "	" "
67496	"	"	"	Stomach and duodenum	"	"	" "	" "
67495	"	"	"	Lungs	"	"	" "	" "
67493	"	"	"	Heart	"	"	" "	" "
67492	"	"	"	Muscles	"	"	" "	" "
67494	"	"	"	Brain	"	"	" "	" "
			WINDSOR COUNTY					
66738	2-17-09	2-18-09	Barnard	Autopsy	Cause of death	Alcoholism, heart lesion	J. G. Sargent	E. R. Buck
66754	"	"	"	Stomach and contents	Alcohol	Positive	" "	" "
66755	"	"	"	Swabs from Vagina	Spermatozoa	Negative	" "	" "
66962	2-26-09	3-2-09	Springfield	Autopsy	Cause of death	Gun shot wounds	J. G. Sargent	E. R. Buck

Cases 11; Specimens 56.

Digitized by Google

Drugs

Lab'y Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
66793	2-20-09	Fowler's Solution	Submitted by G. W. Welch, D. V. S., Northfield.....	.....	.....	1	.....	Contains .848 gms. arsenic trioxide in 100 cc. Below U. S. P. standard.
	Total, 1 Sample.					1		

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

Vol. IX. No. 4.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

Physicians Take Notice.

Under an act of the recent legislature, all marriages, births and deaths are required to be returned to the office of the secretary of the State Board of Health monthly by the town clerks. In order that the town or city clerk may comply with that law, it will be necessary that every physician make the returns of births and deaths that may occur in his practice. The births within ten days, the deaths within thirty-six hours. See sections 3292, 3296, 3307 and 3310. Write with unfading ink and in a plain hand, as your certificates remain as a permanent record in the office of the town clerk. For this reason the secretary of the State Board of Health never sees the original certificates, hence give the cause of death with great care, according to registration methods adopted by the United States census office, to which the secretary has to report all births and deaths.

Town Clerks.

The attention of town clerks is particularly called to the fact that by enactment of the last legislature they are required to report the vital statistics of their respective towns, to the secretary of the State Board of Health monthly, thirty days being allowed for the names of children to be reported.

Digitized by Google

This is a matter of importance; the census bureau insists on having prompt returns from the secretary. He cannot make them unless they are made to him. The law of the state imposes a penalty on clerks who neglect to make their reports as required by law. The same statute also imposes a penalty if physicians, midwives, or the head of a family do not make reports of births. Many town clerks say that physicians fail to make report of births or deaths with the promptness the law requires; that parents do not report the names of children, paying no attention to blanks sent by the clerks for the name. Would it not be well for clerks to call the attention of all persons required by law to make these reports to sections 3292, 3293, 3294, 3295 and 3296 of the public statutes, giving notice that all returns not made as required by law will be placed in the hands of the state's attorney for his action? Probably very few persons realize in how many ways these statutes affect their interests—insurance, pensions, school attendance, franchise of citizens, inheritance of property. It takes but a few minutes to fill out the cards each month. If in any given month there have been no marriages, births or deaths, write "None" on the face of the marriage, birth or death card, date it, put down name of town, and sign it as town clerk, then forward it to the office of the secretary of the State Board of Health. The blank pieces of pasteboards are to be used with the cards returned when there are so few that they are likely to get doubled up or otherwise despoiled in the mail.

FRESH AIR IN THE TREATMENT OF DISEASE.

Not only is fresh air recommended for the treatment of tuberculosis, but it is being urged as a most valuable adjunct in the treatment of pneumonia.

As early as 1860, Prof. Edward E. Phelps, then a resident of Windsor in this state, and a professor of pathology in the University of Vermont, recommended it in the treatment of pneumonia. Meeting with much opposition by the friends to the removal of the windows from the room occupied by patients ill of this disease, he devised a way of furnishing it without exposing the occupants of the room to the cold air.

The window was raised six inches, a board properly fitted to this space; in the board was inserted a tin box the outside of which was perforated with numerous holes admitting the fresh air; to the inside was attached a rubber tube having at its free end a mouthpiece by means of which the patient was enabled to breathe the *pure cold air*. He insisted that this treatment was of special value in these cases. After the lapse of fifty years the profession is adopting his recommendation in the treatment of pneumonia.

Digitized by Google

FLY TIME WILL SOON BE HERE.

That the house fly is a prolific carrier of disease is recognized by all sanitarians—diarrhœa, cholera infantum, typhoid fever, tuberculosis, may all be disseminated by the filthy fly. They breed in stables, especially in horse manure, privy vaults, and other filthy places. They feed on the worst kind of filth, as well as on our food. They carry the germs of diseases on their feet, examination of the foot of a fly showing that one thousand germs of diseases were attached to it; crawling over the most disgusting and vilest filth, then, reeking with the attached filth and germs, they gain entrance into your houses, swarm over the bread, cake, meat, fall into the milk, take a swimming bath, washing off some of the germs. They feed on the discharge of the sick, the sputum of the careless tuberculosis patient (who spits everywhere). Then wonder why the baby has diarrhœa, or some other member of the family has tuberculosis or typhoid fever. How can each family prevent this infection? By doing away with their breeding places. Keep your premises clean, free from decaying matter of all kinds, see that your garbage receptacles are tightly covered, keep them in screened enclosures. Do not purchase any food supply that is exposed to the dust of the street, or where the flies can gain access to them. Screen your doors and windows, especially the kitchen. Remember that "cleanliness is next to godliness," that the watchword of the sanitarian is "cleanliness."

Digitized by Google

SCHOOL FOR HEALTH OFFICERS, MONTPELIER, AUGUST 23 TO 26, 1909.

ACT No. 90, OF LAWS OF 1900, AUTHORIZES THE ESTABLISHMENT OF A SCHOOL OF INSTRUCTION FOR HEALTH OFFICERS OF THE STATE.

In accordance with the provision of this law the Eleventh Annual School for the Health Officers of the State will be held in Montpelier, opening Monday evening, August 23, at 8 o'clock. All health officers of the state are hereby notified and called to be present on that date to attend the sessions of said School. Only in case of his sickness will any health officer be excused for non-attendance; such excuse must be filed with the Secretary.

Per order of the State Board of Health.

HENRY D. HOLTON, *Secretary.*

The difficulty in securing accommodations owing to the Tercentenary Celebration in Burlington is the occasion of holding the School in Montpelier.

This School is held for the purpose of giving instruction to health officers.

Every member of a local health board should register immediately on arrival.

The public are invited to be present, as every citizen will be equally interested and instructed.

Arrangements will be made with the railroads of the state to give convention rates to all those attending the School.

The selectmen, with the local health officer of every town, constitute the local board of health. The selectmen are especially urged to be present.

Digitized by Google

614.0977

GENERAL LIBRARY,
UNIV. OF MICH.
SEP 27 1909

Bulletin No. 1, Volume X.

Issued Quarterly By

Vermont State Board of Health,

September 1, 1909.

Entered October 31, 1901, as second-class matter, Post Office at Brattleboro, Vt. under act of Congress of July 16, 1894.

CONTENTS.

Address of Welcome, by F. R. Dowly, Mayor of Montpelier..... 3
Remarks at the Opening of the Eleventh Annual School for Health Officers, by C. S. Caverly, M. D., President of the State Board of Health 4
Address by Governor Prouty 10
Address by Walter H. Crockett, Esq. 12
Duties of State and Local Boards of Health, by Dr. C. O. Probst, Secretary of the Ohio State Board of Health..... 15
Specimens Examined at Laboratory of Hygiene During Second Quarter, April, May and June, 1909 31
New Items 44

BRATTLEBORO, VT.

1909.

Digitized by Google

Digitized by Google

ADDRESS OF WELCOME.

By F. R. Dowly, Mayor of Montpelier.

Mr. President, Members of the State Board of Health, Health Officers of the Various Towns and Cities of the State:

I bid you welcome here to hold your first school of instruction in Montpelier, and your eleventh in the organization of the society, as I understand it.

I want to say that Montpelier is ready and willing for any improvement for health, wealth or happiness, and without doubt, as you all know, health should come first. We really cannot have the other two, and enjoy them, without health. The State Board of this state is not always upheld by the various town and city officers, as I have come to know. Not long since, we had an epidemic of smallpox in Berlin, a neighboring village, and if I remember correctly there were some cases within a mile of this city. The health officer of Berlin, Dr. Huse, thought he was right and the selectmen thought they were right. However, they did not agree. The health officer called on the State Board for advice, and after that things went along. There was no more fear here in Montpelier. All this was owing to the health officers and their good work. We have here in Montpelier one of the best health officers in the state, Dr. Lindsay. We have had him for several years. There may be just as good, but I doubt if there are any better in the state. Dr. Huse is another good one. I think it is true that every health officer should be kept in office as long as possible, that is, of course, if he does good work.

I am not here to educate you, but simply to make you feel at home, so that you will be glad to come here again. Montpelier is always glad to have these schools or meetings here. I want to tell a story of a couple up in Roxbury who had been going together a long time, and of course John was anxious to get married. Every time he vowed his love was strong and would endure as long as water runs or grass grows, Mary put him off. One day John asked her if she was not satisfied and Mary replied if John would love her as long as Zed Stanton ran or held office she would be satisfied. This story might be applied to myself as to holding office.

I hope you will feel so at home here you will be willing and glad to come in the future, either as a school, convention, legislators or individually. I am glad to see you and welcome you, and I am sure Montpelier is glad of your visit.

The Apollo club extends a cordial invitation to you all to visit their rooms and avail yourselves of the amusements there.

My best wish is that these health officers will learn a great deal from the instructors who are to be here, so they will be second to none in any state in the union.

Digitized by Google

REMARKS AT THE OPENING OF THE ELEVENTH ANNUAL SCHOOL FOR HEALTH OFFICERS.

By C. S. Caverly, M. D., President of the State Board of Health.

Ten years ago the first state Health Officers' School in this country was held in Vermont. To-night's session starts the school on its second decade.

Until now these schools have always been held in the city of Burlington. That city has gradually become the headquarters of the State Health Department, by reason of the location of the State Laboratory there. Yielding to the pressure of circumstances, it has seemed best to hold this session of the school elsewhere than in Burlington; and it is certainly fitting that this distinctly Vermont institution should come to the capital of the state. If the experiment of moving this school, of holding it in a new place proves successful, both in the success of the session and in the effect it has on local sanitary conditions, it may be thought best to visit other localities. This school was, as many of you are aware, only one evidence of awakening interest in public health work in this state. It was the same practical interest that brought about the establishment of our State Laboratory. Following the legal establishment of both came real live work in Vermont for better health conditions; conditions that make for our highest physical welfare. In sanitary matters Vermont has, we believe, kept step with scientific progress, and this progress has been very great. Our health laws have multiplied apace, reflecting the popular interest in matters pertaining to health.

Ten years ago our laws provided for boards of health, state and local, and prescribed the duties of these boards. These duties were the control of epidemic disease and, in a general way, the supervision of health conditions in the several towns. A law providing for the registration of vital statistics was only just enacted, and schoolhouse sanitation was the subject of an act of 1896. Slaughter-houses were given some attention, and the Laboratory of Hygiene was established in 1898. This latter law was the most significant and important health legislation that the state had ever had. The Laboratory at once became a guiding force in most of our practical health work.

Each succeeding legislature has been generous with its public health laws. Old laws have been improved, and new ones enacted; the registration laws have been kept up-to-date; the powers and duties of the state and local boards of health have been constantly broadened; schoolhouse sanitation and the sanitation of all public buildings have received attention; a modern food law is in force and dairies, creameries and slaughter-houses and markets are subject to regulation; laws have been enacted looking to the protection of water supplies, and providing for the laying of sewers in towns; there are tuberculosis laws and laws dealing with the spitting nui-

Digitized by Google

sance; the practice of embalming is subject to legal regulation, and a sanitary inspector and engineer are added to our working force; diphtheria antitoxin is distributed free to our people; and finally our Laboratory of Hygiene has had its duties increased beyond anything that could have been guessed at its inception, and this school has become a legal institution. Surely we have laws enough, mostly good laws.

From the laws of a decade ago which provided for boards of health, with powers rather vaguely defined and quite general, we have now a health code dealing specifically with actual conditions affecting health, and so framed as to make its enforcement possible. What of results? Sickness and death are still with us. Yet we are sure that as far as these are now preventable, we have less sickness and fewer deaths than formerly. This is especially true of that class of infections which prevail among those of young and middle life. During the last two years for which figures are available, viz. 1906 and 1907, there were only 99 deaths in the state from diphtheria. During the years 1896 and 1897, a decade earlier there were 285 deaths from this disease in Vermont. We can surely attribute this saving of life to our health laws and health officials.

Our recently enacted law providing for the free distribution of diphtheria antitoxin must certainly reduce this present mortality still more.

Typhoid fever in 1896 and 1897 caused 162 deaths, and ten years later only 108. This preventable and inexcusable disease will show still further and greater reduction, when all our towns exercise due care in the selection of water supplies. Notable progress is being made in this direction. The campaign against typhoid is a campaign for pure water. An act of the Legislature of 1902, amended by the Legislature of 1904, gave the State Board of Health authority to prohibit the use of water by any community, "when, in its opinion, the same is so contaminated, unwholesome or impure that the use thereof endangered the public health." It appeared to the State Board, in 1905, that there were five towns in the state using water that was "so contaminated, unwholesome, or impure that the use thereof endangered the public health." The State Board arrived at this conclusion only after repeated and thorough analyses of the supplies of all these towns, after the local conditions had been studied by an expert engineer employed by the Board from without the state, and after a fair and careful study of the incidence of water-borne diseases, especially typhoid fever, in each of these towns. It is often argued, not without reason, that the logical solution of the typhoid problem lies in the conservation of our sources of water supply: that our streams and other bodies of water, from which our towns could most economically draw this supply, should be protected from pollution. As an abstract proposition, this is quite reasonable. It is an exceedingly promising sign of the times, to see the widespread and very live interest that is being taken all over our country in this subject. All of our large rivers, and most of our small streams and lakes, are now merely open sewers. The water of none, untreated, is safe

Digitized by Google

for human consumption. In this respect we are distinctly behind the older countries of Europe. The time is surely coming when other methods of sewage disposal will be practiced, and with that time in view, no town should think now of installing expensive sewerage systems, which empty the effluent into the nearest body of water.

In 1904 the State Board of Health in Vermont adopted the following regulation: "Hereafter no city, town, village, community, public institution, or individual shall empty any sewage into any body of water, spring or stream tributary thereto, when such water is used by any city, town, village, public institution, individual, or by any water or ice company, as a source of water or ice for domestic use." But this regulation could not be applied to all the communities in the state already discharging their sewage into water courses, for its enforcement would entail enormous cost and real hardship on many towns, large and small.

The practical question which the typhoid situation in Vermont presented in 1905 was, What is the surest and quickest remedy for the present situation? The statute prescribed the remedy, direct and practical, and the Board proceeded to apply it. Thereupon the Board issued a warning notice to each of the towns then known to be using polluted water, viz. Vergennes, Burlington, Swanton, Enosburgh Falls and St. Johnsbury, that unless steps were taken to improve their supplies within a year, the Board would exercise the authority given by law and prohibit the use of the condemned water in each place.

Swanton and Enosburg Falls took measures looking to an improvement of their supplies, and the city of Burlington, somewhat tardily, owing to unfortunate local conditions, proceeded to instal a filtration plant. The towns of St. Johnsbury and Vergennes took no steps to prevent the use of the polluted water, although many citizens of the former place changed their source of supply. The State Board then placed a prohibition upon the use of these polluted supplies, and applied to the Court of Chancery in the St. Johnsbury case to enforce the order.

The village of St. Johnsbury and various individuals included in the order of the Board took the matter to the Supreme Court, and this Court has just rendered a decision, favorable in all essential points to the Board of Health.

If, as now seems likely, this decision helps the Board to stop the wholesale use in this state of grossly polluted water, by cities, villages or water companies, it will surely have a far-reaching effect on the future prevalence of typhoid fever in Vermont. With no large community perennially spreading this disease, our present low death rate from this disease ought to be cut in two.

The health officers of Vermont need no instruction on the relation of typhoid fever to water supplies. Former schools have heard this subject treated by some of the highest authorities in the country. If, however, an argument were lacking to show the advantages of a pure water supply from

Digitized by Google

a typhoid standpoint, the recent experiences of Burlington under a polluted and, later, under a pure supply, should furnish that argument.

The following figures are taken from the records of the health department of Burlington:

Number of cases of typhoid fever reported:

In 1906, 43 cases.

In 1907 (the public having been warned against using raw water), 23 cases.

In 1908 (by months; the filtration plant was put in operation in April of this year),

January	5 cases	July	0 cases
February	7 cases	August	0 cases
March	4 cases	September	2 cases
April	0 cases	October	0 cases
May	0 cases	November	1 case
June	0 cases	December	1 case

In 1909:

January	0 case	May	1 case
February	0 case	June	0 case
March	1 case	July	0 case
April	0 case	August (to 20th)	0 case

In the sixteen months since the filtered water was turned into the mains, there have been six (6) cases of typhoid fever reported to the health officer of Burlington; and in the sixteen months directly preceding there were reported to this officer, 39 cases.

Comment on these figures is unnecessary.

Scarlet fever caused less than half as many deaths during the last two years as ten years before, tuberculosis 156 fewer, and measles 33 fewer.

These figures may not accurately measure our progress in preventing disease during the past decade, yet they are instructive. They certainly seem to show that we are really making headway against such diseases as are now known to be preventable.

From the five diseases mentioned, practical sanitation is saving to our state at least 450 lives each two years, as compared with ten years ago. This saving of life is not among the aged and decrepit; rather they come from the young and those of productive age. Each has a commercial value. I leave it to the economist to estimate what this saving of life is worth to the state.

None of us believes that the limit has been reached. Our vanishing death rates from diphtheria and typhoid fever, from tuberculosis and scarlet fever, will ere long extend to pneumonia and cancer, those scourges that now are taking their place at the head of our mortality tables.

In no line of human activity can predictions more confidently be made than in that of preventive medicine. If we may judge the future by the immediate past, by the skill and energy everywhere in evidence in searching

Digitized by Google

out disease causes, we may predict with confidence the stamping out of all that class of diseases which we now rate as infectious and preventable. This prediction is already made of that universal scourge, tuberculosis, by those qualified to speak authoritatively. We have laws enough, as I have said. If every public health law in our statutes were literally and universally obeyed, infectious diseases would soon become very rare.

Perhaps the public health laws are as well enforced as any laws, yet I wish to urge upon the health officers of the state to study these statutes carefully, and to seek by every means to make these laws respected in every community. It occasionally happens that someone will not respect any law until he is given a personal demonstration of the possibility of its enforcement. And it is equally true that the continual failure to enforce any law begets contempt of that law.

Our health laws affect everybody. They reach us all, at some time or other, and frequently at inconvenient times and unpleasantly.

There can be no surer test of good citizenship than respectful and willing obedience to these laws, at personal inconvenience and cost, for the public good.

It is sometimes pleaded that the enforcement of these laws amounts to an infringement of personal rights. In this connection permit me to quote from the recent decision of the Supreme Court in the St. Johnsbury case referred to.

In his opinion the Chief Justice says: "As to personal liberty, our Bill of Rights declares that government is, or ought to be, instituted for the common benefit, protection and security of the people, nation, or community, and not for the particular emolument or advantage of any single man, family, or set of men who are a part only of that community. Closely allied to this fundamental proposition is the further declaration that the people of the state, by their legal representatives, have the sole, inherent and exclusive right of governing and regulating the internal police of the state. . . . . And the state may invest local and state Boards for administrative purposes with authority in some proper way to safeguard the public health and the public safety.

"We come now to consider more especially what personal liberty is as secured by constitutional provision; and on this question we refer to Jacobson v. Massachusetts, 197 U. S. II., 25 Sup. Ct. 358, 49 L. Ed. 643, which affirms the legality of compulsory vaccination for the prevention of smallpox. There the plaintiff in error insisted that his liberty was invaded when the commonwealth subjected him to fine and imprisonment for refusing to submit to vaccination; that the compulsory vaccination law was unreasonable, arbitrary, and oppressive, and therefore hostile to the inherent right of every free man to care for his own body and health in such way as to him seemed best; and that the execution of such a law was nothing short of an assault upon his person. But the court said that the liberty secured by the Constitution of the United States to every person within its juris-

Digitized by Google

diction does not impart an absolute right in each person to be at all times and in all circumstances wholly free from restraints to which every person is necessarily subject for the common good; that on any other basis organized society could not exist with safety to its members; that society based on the principle that every man is a law unto himself would soon be confronted with disorder and anarchy; that real liberty could not exist under the operation of a principle that recognizes the right of each individual person to use his own whether in respect of his person or his property, regardless of the injury that might be done to others; that that court had more than once recognized it as a fundamental principle that persons and property are subject to all kinds of restraints and burdens in order to secure the general comfort, health, and prosperity of the state, of the perfect right of the Legislature to do which no question was ever raised, nor on general principles ever can be raised as far as natural persons are concerned."

Words of wisdom, these: eminently Christian words! They breathe the same spirit as those other words that come down to us through the ages, "Love thy neighbor as thyself." On such principles are the foundations of great states, great in all that makes for physical health and the highest prosperity. Such principles lie at the foundation of all community laws, not alone health laws. We have had notable examples in our day of what intelligent sanitary laws may do for a nation. Without such laws, impartially and rigidly enforced, our own country could not for a day hope to prosecute its great work on the Isthmus of Panama.

Such laws, intelligently and vigorously practiced, played a leading rôle in the victory of Japan over her powerful antagonist, Russia.

No state whose citizens selfishly think only of their individual comfort and forget the common good, can reach its highest material prosperity.

Signs are not wanting of an awakening in the industrial world to the importance of sanitation to large moneyed interests. The health of its employees is becoming of economic interest to large corporations, and the large life insurance companies are taking practical steps to safeguard the health of their policy holders. Why? Simply because they are convinced that it will pay.

Sanitation, preventive medicine, public hygiene, by whatever name you call it, is in its infancy. While we congratulate ourselves on results achieved, the possibilities which the future holds can not even be guessed. Of this we may be sure, life will become safer and longevity increased, as we make our statutory laws and our practices conform to the ever developing laws of science.

The program of this school contemplates the usual discussion of a large variety of practical sanitary subjects, but the last number on the program is by no means the least important, viz. "Legal Points in Health Work." Every subject on our program is a live one; the last session, however, devoted to the health laws, should claim the attention of every health officer. We should familiarize ourselves with these laws, and take this opportunity,

Digitized by Google

with the aid of an attorney who has had experience in their enforcement, to secure practical assistance in construing them.

We are fortunate in securing good authorities as instructors at these sessions, and all health officials and the public generally are invited to take part in the discussions. The time is fully occupied and the program crowded, hence the necessity for brevity in what we have to say.

This is really a school; we are here for a purpose, viz. to learn. It is a school supported by the state, let the state get the benefit of its sessions.

ADDRESS BY GOVERNOR PROUTY.

Mr. President, Health Officers of the State, Ladies and Gentlemen:

I suppose it is one of the duties of the State Board of Health to look after the health of the Governor; therefore, they have him here to-night to show that they have performed their duty faithfully. He is in very good health, showing another duty faithfully performed.

This is an age of conventions. Any one who has the opportunity a Governor has to know about these matters, must be convinced of that, because hardly a day passes that I am not called upon by some society or some institute to appoint delegates to attend a meeting, and these meetings are nearly all of great importance; therefore, I say, this is an age of conventions. It is an age of institutes. It is an age of study. We ought to be congratulated on having such a school as this because the subjects discussed here are, of course, the most important that come before the state and its people, and as you carry out the laws that have been formulated in wisdom and integrity, so shall the state profit thereby. There is nothing so vital as the health of the people. We should congratulate ourselves that statistics show that during the last thirty-five to forty years the average length of life has been increased fifteen years. This has been brought about by study by the doctors. It is because the doctors have come together and seriously considered these great questions that this result has been obtained, therefore we should congratulate ourselves that the state has seen fit to provide for this school where questions of such vital importance can be so wisely discussed. The state should be congratulated on having a State Board of Health that is willing to give its time, wisdom and energy for the state. We all know the members of the State Board of Health receive practically nothing for what they do. It is a labor of love which they are performing. They are men who are capable of doing great things; I can assure you, gentlemen, this is a fact. Not one of them but is able to secure a lucrative practice and they have done so; therefore, when they give up their

Digitized by Google

time, they are giving up a great deal for the betterment of our state. I want to thank each member of the State Board of Health for what they have done in the past and what they are doing now.

There are some matters which should perhaps be better understood. The State Board of Health is called upon to render a great many decisions and issue many orders. Those orders seem very hard sometimes. It seems as though the Board was arbitrary. It seems as though they were doing things that were unnecessary. I have no doubt but that orders are at times issued that are not absolutely necessary. I have no doubt we could get along without them, but I do not believe any orders which are issued by the Board, were they carried out, would not be for the benefit of the people of the state. We should take into consideration the fact that the State Board of Health is, to the best of their ability, trying to carry out the laws which have been formulated for the good of the people. They are doing their duty as officers of the state and according to their best judgment, and not from any personal motive. If we stop a moment and think of that in the proper way, we should give them credit instead of calling them arbitrary and unreasonable. It seems sometimes as though there should be one more officer directly connected with the State Board of Health and that is a lawyer. Of course, we have the Attorney General but he has something to do part of the time and it has impressed me sometimes that they should have a constant adviser with them. The laws of the state are becoming so numerous and complex that it requires a first class lawyer to interpret them. If the Attorney General was called upon to render all these decisions, he would be busy all of the time. I suppose you who are health officers are confused a great many times as to just what your duty is in regard to certain matters. In my section, there has been a great deal of confusion in regard to the certificates for dairymen. I expect something will be said about that matter before you go away from here and I hope it will be made clear to you just what your duty is in regard to it. I know that many of the health officers feel that it is asking a great deal of them to go and inspect each dairy, as the law seems to imply they shall, and do it for two dollars. It seems to me it is a little bit hard, but it is one of the things you have to do for the fun of it because you wish to be good citizens. Good citizenship calls for attendance here and at other conventions where the great subjects are discussed and where you may pay your own bills, but you are glad to do this because of the benefit which you receive and which you will be able to give the public when you return to your respective homes. Because of this feeling of good citizenship and because of the work you are doing, you are probably the best hated men in the state. We have to do our duty because of necessity.

I did not come here to-night to make any extended address in spite of the fact that it is so advertised.

I wanted to come to see you because you are doing a great work all over the state, but you can do much more if you will carry out your instructions

Digitized by Google

from the State Board of Health and the laws which are now on the statute books without any favoritism and without any fear. If you will do this, you will in a short time accomplish these things which have been so well spoken of by your president, Dr. Caverly.

I wish you Godspeed in your work and I congratulate you again on having such a school as this and am sure you will receive great benefit from it.

I thank you.

ADDRESS BY WALTER H. CROCKETT, ESQ.

Mr. Chairman and members of the State Board of Health, members of the Health Officers' School, and Gentlemen:

It is a privilege to meet the standing army that protects the public health of the state of Vermont. Without making any invidious comparison, I suppose the health officers really do more for the protection of the men, women, and children of the state than our state militia does, because our soldiers are seldom called upon to do any active duty.

I have been requested to say something on the value of publicity as it relates to matters of public health. I suppose while there are a great many kinds of publicity, that you will pardon me if I speak of the publicity of the newspapers, being an editor.

Many of you are here because you have read in the papers about this Health Officers' School. I presume some of you have lost the notices sent out by the secretary and had to depend on the newspapers for the date and also for the program.

The powers by which all news items are collected are of tremendous scope and not generally understood. In every important town and city in this country, in the capitals of Europe and on the islands of the sea, there are the representatives of the great press associations which are the eyes and ears of the millions which make up the great reading public. When an event of unusual importance occurs, news is sent to the great centers almost as rapidly as the nerves of the body carry the sensations to the brain. There is a difference in time of five hours between London and New York and just to illustrate the rapidity with which news travels, faster than the march of the sun, I will say that Mr. Gladstone died about five o'clock in the morning and the news of his death was received in this part of the United States shortly after midnight.

Suppose for example the news bureaus should send out word that cholera had broken out in St. Petersburg, yellow fever in Havana or New Orleans, or some dangerous epidemic had appeared among cattle or

Digitized by Google

sheep or swine. Immediately, if this happens in our country, the whole machinery of government is set in motion and officers are sent out to guard the public health. The news is given to warn the public to beware of the infected regions.

It is not merely in warning the public of the outbreak of disease that the newspapers give aid but the chief service is that which comes through the educative power of the press. This is not always the most popular kind of reading. The newspapers must dwell upon things which are of value to the public health. They must iterate and reiterate again and again. Then the good seed is sown. Some finds lodgment and bears fruit. This is done largely as a matter of duty. It adds little to the subscription lists or sales records. There may come a golden age when the reading public will prefer stories of health and happiness rather than to read the details of a Thaw trial. I regret to say that that time has not yet arrived. Nevertheless the public does read, at least some of the people do, the articles that are printed regarding health topics, and some good is done. The physicians will generally agree that in all of these matters that affect the public health and in the formation of public opinion regarding sanitary reforms, a very great deal depends upon the attitude of the newspapers. The agitation that will change a hostile to a favorable sentiment must come largely through the newspapers.

This matter of publicity is going on all the time in matters regarding the protection and purification of water supplies, and the same is true of milk. The members of the State Board of Health will tell you that typhoid is spread through impure milk as well as through impure water. Then there is the menace of tuberculosis, a campaign against which is being carried on through the newspapers. I cut an item to-day from a New York paper which states that twenty-eight school children in every one hundred from the poor districts of the city are affected with tuberculosis, and it goes on to point out the necessity of out-of-door schools in order to cure these children who are in the first stages of tuberculosis. It tells how this has been done with great success in Boston. I use this as an example of what the press is doing as a matter of daily routine. Then there is the campaign against the slums of the great cities. No one has done more in this fight than Jacob Riis when he was a New York city reporter. He interested Police Commissioner Theodore Roosevelt and the transformation made as a result of the efforts of these two men is wonderful. It is through publicity that this work is carried on. Many other instances might be cited of the great benefit derived through publicity. Take the case of the inspection of the health of school children; the danger of infection that comes through the mosquito and the fly. These are methods which are now being agitated by the press.

The matter of sewage disposal which has been alluded to by your president is one of the problems of the future. We should commence a campaign against the pollution of our waters. We are not only defiling our

Digitized by Google

streams but the process is wasteful. This sewage which we turn into the streams, which is, of course, dangerous, in some instances is made a source of revenue.

The gospel of the out-of-door life is being preached with much benefit as a result. This is a great battle against disease which is only just begun.

Prejudice is a great and powerful foe and the rights of the individual, as Dr. Caverly has said, must be subordinate to the rights of the public. The welfare of the community is greater than the rights of the individual. No person has the right to say, "I shall drink polluted water if I choose." He may, by so doing, contract typhoid fever and spread it through a whole village or city.

I am glad of the good news brought here to-night by your president regarding the decision of the Supreme Court which upholds the powers of the State Board of Health. You, as public officers, guard the health of your town and when there are cases of scarlet fever or diphtheria or smallpox, you cannot afford to conceal them. It is always better to tell the truth about such things. The confidence of the public will be with you if you tell the facts as they exist. The merchants sometimes come to the newspapers and ask that no mention be made of such conditions because it will hurt the business of the town or city. If the facts are suppressed, rumor does its pernicious work. You hear that people are dying by droves. People will not go in the town to trade. Then the merchants go to the health officer and say, "You would better tell the truth." But by that time, the people will not believe the truth. Of course harm can be done by a sensational news article, but it is better for the inhabitants, better for the merchants and better for the people throughout the state who have a right to such facts, to know the whole truth.

There is, of course, a certain professional etiquette that requires a physician to be reticent regarding his patients and he must guard their rights in a very zealous manner. But there is a line drawn between health officers and physicians. The health officer is a public servant doing the public's business, and it seems to me when a newspaper man comes to you and asks you for the facts regarding the health of your immediate locality that it is a fair question and that the public are entitled to a truthful answer. The state recognizes publicity. They say you shall put up a placard announcing a contagious disease in a house. That is for the public's benefit and is a kind of publicity.

Sensational papers are classed under the head of yellow journals. These are few, if any, in Vermont. Gentlemen, don't judge them all by that class. You have some black sheep among your physicians. The newspaper men receive all kinds of confidences and the most interesting stories are the stories that are never printed. If you will give the newspaper men a good reason for withholding the facts, you will find he will respect your confidence every time.

Digitized by Google

In your capacity as health officers, you are required to take cognizance of a great many unsanitary conditions. The way to get rid of these nuisances is through publicity. The state has given to the Board of Health, wisely I believe, very great powers. Behind the State Board of Health there stand ready to coöperate in every way possible the newspapers of the state, and behind the press is the great body of the intelligent people of the state who desire that in the battle against ignorance and disease and evil this commonwealth shall stand in the forefront. In this contest not the least effective of the weapons used is publicity.

DUTIES OF STATE AND LOCAL BOARDS OF HEALTH.

By Dr. C. O. Probst, Secretary of the Ohio State Board of Health.

The duties of boards of health may be included under three heads: Educative, Legislative, Executive. In a country like ours, where the people rule, or at least have the right to rule, success in health work is best attained if carried out in the order given.

Emerson said, or might have said, "A successful law is but the peg that marks the point to which public opinion has already advanced." Legislation, therefore, in advance of education, is often or even usually futile.

Realizing the correctness of this view, boards of health, and especially state boards of health, have given considerable attention to educating the public in matters relating to sanitation, and public and private hygiene.

This has been necessary in the past, and will doubtless be necessary in the future, but in my judgment health education should become a fixed part of our school and college systems. For instance, boards of health, by circulars and otherwise, are trying to teach the people how scarlet fever, diphtheria, smallpox, tuberculosis, and other like diseases, are caused, and how they may be prevented. Such knowledge as that should be in the hands, or rather in the head, of every school child above the primary grade. It is much easier to teach this than it is to teach grammar, and it would be of much greater importance to the individual and the race.

How much easier it would be for boards of health to eradicate such diseases if every man, woman and child had been thoroughly instructed in school as regards the manner of their production and prevention.

Some of my friends think my ideas regarding this matter carry me too far; but I firmly believe that some here to-day will see a change in our school system which will place the physical development of the child and

Digitized by Google

the protection of its health upon a level with its mental development. And those who prize moral development more than either the physical or mental must finally recognize how much good morals depend upon good health, and help us to secure the latter.

To this end, we are to see, as I believe, a specially trained school physician in every school, with authority equal to that of the teacher or principal, coöperating harmoniously with them for the full development of the child, including and exalting instructions in regard to the best means for protecting and preserving life and health.

I do not believe our boards of health should drop their educational work even after the schools and colleges take up health education in an active way. There will remain certain phases of the work that can be done better by boards of health.

The tuberculosis crusade has developed new methods of public education in health questions, which might well be extended to other diseases and causes of sickness. Those of you who attended the last International Congress of Tuberculosis at Washington saw the various models, banners, pictures, etc., illustrating different phases of the tuberculosis problem.

For example, in one place coffins, and in another skeletons, of different sizes, were used to illustrate the very large number of deaths from tuberculosis as compared with the deaths from the much more dreaded diseases of cholera, yellow fever, smallpox, etc. The gigantic skeleton of tuberculosis when compared with all the others combined taught a lesson that none who saw can ever forget.

Your state is among the few advanced states that have prepared traveling tuberculosis exhibits. I consider this one of the most important movements that has been made for the prevention of this disease. It is the kind of educational work that should still be carried on by boards of health after the school authorities make proper provision for teaching health subjects in the public schools.

The State Board of Health should be given funds to enable it to make use of this method of education along other lines. Take the milk question, for an example. We all know the many dangers to public health from an unclean or infected milk. We have frequent outbreaks of typhoid, diphtheria and scarlet fever from this cause; and every summer, especially in our large cities, we have the terrible slaughter of innocent babes from impure and dirty milk.

Maryland, a few years ago, had a state milk exhibit, along the lines of your tuberculosis exhibit. I recently saw such an exhibit in our city of Cincinnati.

Various legislative enactments have been tried, both state and local, to prevent the evils arising from impure or infected milk. These have not been attended with great success. Why? Because education has not yet advanced public opinion up to the peg where successful legislation begins. People have grown fond of milk with a flavor of cow manure, and do not

Digitized by Google

take kindly to the necessary rise in price if the dairyman is required by the board of health to deliver perfectly clean milk.

Our state boards of health should start on the road with traveling milk exhibits. Lantern slide pictures of all the dairies furnishing milk in any town, showing the cows, the milkers, the stables, etc., would probably make the people in that town sit up and take notice. A taste of milk that was perfectly sweet, that had been kept so for weeks simply by cold and cleanliness, would convince the housewife, who had frequently found her breakfast cream sour, that something was wrong with her dairyman. Methods of model dairying, records of infantile mortality, bovine tuberculosis, and many other things of great importance to the people, could be graphically presented to the public in this way. School sanitation could be presented in like manner, and various other matters in regard to which the public must first be shown the evils growing out of doing things in a wrong way, before we can correct them.

While much of this educational work falls naturally to the State Board of Health, something may be done by the local boards. They should in the first place be well informed themselves of the sanitary needs of the populations within their jurisdictions. The water and milk supply, sewerage, disposition of garbage and other wastes, the condition of schoolhouses, and other matters affecting the public health, should be studied by them. Public attention should be drawn to decided evils requiring changes or improvements.

The press is always willing to help. Public meetings can be held. For instance in my home city a bond issue for a large amount was to be voted upon to pay for proposed water purification. This was bitterly opposed by some of our influential people, and, I am sorry to say, by some of our leading doctors, who, in letters to the press, stated that it was impossible to remove disease-producing germs from water by filtration. The state and local boards of health assisted in arranging for a series of public meetings in various parts of the city, where the problems of water purification and the needs of the city in that direction were thoroughly discussed. The bond issue carried, and our new filtration plant is now universally commended.

There are many ways along educational lines that local boards of health may enlist public support and make their work both easier and more effective.

There might be included under Education the various advices given by boards of health, and especially state boards of health. This forms a considerable part of the work of the latter. Many conferences are held with city officials and others in reference to various matters affecting the public health, and a great deal of the official correspondence is in the nature of advice and information which is educational in effect.

The second division of our subject, Legislation, is a very important function of boards of health. In the first place we have state health laws

Digitized by Google

adopted by the Legislature. These may be wise or unwise, effective or ineffective, according to how they are drawn. The over-enthusiastic sanitarian, with no practical experience in health work, thinks to cure all sanitary evils by law. Some impracticable if not absolutely foolish health legislation is apt to be proposed by such persons.

On the other hand badly needed legislation in the interest of, and demanded by, the people, will be opposed by selfish interests. Boards of health should largely shape health legislation, and they should be effectively organized to aid in securing wise and necessary laws.

Local boards of health are themselves legislative as well as executive bodies in most if not all the states. It would be exceedingly difficult to frame state-wide health measures that would be applicable to all communities in the state alike.

In framing health rules and regulations great care should be taken to have them adapted to the community they are to serve. We find in some places that the people's ideas of sanitation are very primitive. They have been used to unsanitary conditions for generations that would be intolerable in some college town where the majority are people of culture and refinement. There should be, however, in every community a strict enforcement of proper measures to prevent and control the spread of dangerous communicable diseases, and regulations to that end should be practically uniform throughout the state.

We must resort to education to bring the more backward communities up to higher ideals in sanitation. However, we may in some instances make use of legislation as a means of necessary education. That is, the strict and impartial enforcement of some wise health regulation may be the best means to teach negligent people what is good for them.

Health conditions are closely bound up with sociological conditions. Factory regulations, child labor, housing problems, and many other matters of like nature, have an important bearing on health. Boards of health should take an active interest in all such problems, and lend a helping hand to all such proposed reforms.

The executive functions of boards of health are the most important. It is what the board and the health officer do that counts. Education merely removes obstacles, and legislation provides the way for doing things.

The executive work of the board of health or health officer divides itself broadly into two classes. One is to prevent the spread of communicable diseases, and the other is to remove, as far as possible, the conditions that are inimical to health.

Our easiest task should be to prevent the spread of communicable diseases. Every one desires to be protected against these, and it would seem an easy matter to enforce the most rigid regulations for their prevention. The continued prevalence in all countries of such diseases as diphtheria and scarlet fever, to say nothing of the milder diseases, whooping cough and measles, shows our lack of success in doing so. People are unwilling

Digitized by Google

to undergo the strict restraints necessary to prevent these diseases from being carried from one to another. The best we can do, under present conditions, is to hold them in check.

Removing the causes of disease, which is at present largely the abatement of nuisances, so far as boards of health are concerned, also presents many difficulties.

Here I would draw a distinction between the duties of the state and local health authorities in dealing with such cases. My own view is that the state board of health should have supreme authority in dealing with dangerous communicable diseases, such authority to be used, however, only when the local authorities fail in their duties. The reason for this is that all the people of the state are endangered when any locality fails to control such diseases. It is here that the state board of health steps in and, if necessary, takes complete charge of the situation. But even in this case the responsibility of the community should be fully recognized, and they should pay back to the state any costs incurred by reason of their neglect.

In line with this I would advocate uniform regulations or requirements for the control of communicable diseases, such regulations to be by act of legislature rather than by rules of the state board of health. In my observation acts of legislature are more apt to be observed and are more easily enforced than are regulations of boards of health.

In the abatement of nuisances the local authorities should be held to strict account. A local nuisance concerns the state at large scarcely at all. There is no more reason why the state board of health should be called upon to remove an offensive stable or pigsty, than that the state militia should be appealed to to stop a street brawl. It is a fact, however, that a considerable part of the correspondence of the Ohio State Board of Health relates to requests for the abatement of such common nuisances.

The laws for the abatement of nuisances should be plain, and easily enforced. There should be in most cases no jury trial, for it is usually difficult to convict where twelve neighbors render the verdict. There ought to be some easy path for the complainant to reach the court direct where the local authorities refuse to act.

I am unfamiliar with conditions in your state, but I know too well how often the health officer in my own state neglects complaints of this character, especially in small villages. The reason is obvious. The health officer's pay is insignificant. It is against his interests, and he dislikes exceedingly, to have a quarrel with one of the citizens, who may be a patron.

It has seemed to many in such cases that the state board of health should step in; but if they take up one such case in a community they must soon take up many more, and in the end would have to assume charge of such work throughout the state.

We should not lessen the responsibilities of localities in caring for

Digitized by Google

themselves, and they should not expect the state to do anything for them that they have in their own power to do.

There is a class of nuisances, however, where the health and comfort of practically the whole community may be involved. The local authorities may be powerless to deal with such cases, and here it would seem proper for the state through its state board of health to interfere.

A notable example of this is where a public water supply has become dangerously contaminated, or a stream has been so corrupted, as to endanger the health of those dwelling along its banks. Even here there are those who contend that "home rule" should prevail, and that, at the most, the state board of health should act simply in an advisory capacity. Much the same arguments are raised in regard to extending the powers of the Federal Government to deal with neglected state affairs.

The trend of public opinion, as I see it, is in favor of placing more power in the hands of the central authorities for the protection of the people. As regards the protection of public water supplies, several states have lately enacted advanced legislation along these lines. In one of these states the state board of health may, when complaint is made by proper local authorities, compel any municipality to abandon or purify a polluted water supply, or to purify its sewage for the protection of its own or some other town's water supply. The abuse of this power is checked by requiring the governor and the attorney general to sanction such an order; and furthermore, if the order is considered unjust, its provisions may be submitted to three competent sanitary engineers, whose decision shall be final.

It may be interesting in this connection to speak of a parallel case where the question of federal and state jurisdiction is involved. The states of Pennsylvania, Ohio, West Virginia, Kentucky and Indiana, which border on the Ohio river, have recently joined in an effort to protect that stream against pollution. An able opinion by one of the state authorities has been given to the effect that federal control of this stream is limited to questions involved in navigation: that regulations to prevent its pollution can be enforced only under police powers which were never relinquished by the states to the National Government. On the other hand a federal jurist holds that the National Government has complete control of such waters.

I feel sure that our relief from conditions along this stream, already dangerous, will be much more certain should federal jurisdiction be upheld.

In conclusion permit me to say that the duties of boards of health and health officers are becoming yearly more important to the communities they serve, and more complex in their nature. The Panama canal has taught commerce its dependence upon sanitation, and the Japanese in their Russian campaign opened the eyes of the world to the horrible and needless losses of life from preventable sickness in war. People are just

Digitized by Google

beginning to realize that in times of peace this needless loss of life and health is going on day by day, and the time must come when the health service of the state will be organized on a fitting basis, and the health officer will be given the honors and rewards which in the past have been showered upon those whose duty it is to kill the greatest number in the shortest possible time.

DISCUSSION.

Dr. C. S. Peck, M. D.

Mr. President, Ladies and Gentlemen:—The Duties of the Health Officer, the subject upon which I am asked to open the discussion, are largely prescribed by law, and would seem like many other questions, at first sight quite easy to answer, but, like many other complex questions, requires in its administration an enormous amount of what we call common sense, besides a knowledge of the laws which are intended quite as much to guide and control the people as well as the health officer, who is supposed to act as a sanitary guardian.

There should be a mutual effort on the part of the health officer and the people to arrive at the greatest amount of good for the community in a sanitary way and this can be and many times is the result of careful management on the part of the health officer. I know of no work in which moral suasion carries so much weight as in the labors of the health officer. First of all I would advise him to know his business most thoroughly and then be able to convince the community he is absolutely correct. He sustains the same relation to the community that a school teacher does to his pupils. He is an educator in the strongest sense of the word and the moment the people, like the pupils, find the teacher cannot do the examples in the book, from that time on they distrust his ability and trouble begins. He should know the principles upon which he is to act in correcting a nuisance, disinfecting a house after a germ disease has prevailed, proper sanitary plumbing with the laws which govern ventilation and the prevention of sewer gas, etc. He must be able to point out the dangers of all unsanitary conditions to the people and he must convince the community that he is working for their interests, not for his fee, and then they will listen, and when he gets their confidence he has made a great gain and his work is easy. One of the first principles upon which every health officer must act is to treat everybody alike; the rich and the poor, the just and the unjust, are all to be handled with the same hands and in the same manner. Friend or foe must be managed with the same just rule, a fair deal for all and favors for everyone.

Strictly speaking, it is the duty of the health officer to keep the community over which he has charge in a sanitary condition, and when contagious diseases occur, as they will now and then, through the failure in diagnosis of some inexperienced young practitioner, do the best he can to

Digitized by Google

control the disease and not call scarlet fever the itch and allow the family and premises to go without being fumigated. Such things are unnecessary and would not happen if the younger doctors could have the opportunity to study this class of diseases which, like smallpox, are almost unknown to the younger men of the profession, and it is not their fault altogether that they do not make an accurate diagnosis at sight, and it is for this reason a health officer should, if possible, be a physician of some experience. There are cases now and then in which we find people who are disposed not to obey the laws of the state which pertain to sanitary matters, but rather have their own way and do their sanitary work as they think best and when it suits their convenience. That class of people I think should be treated kindly but firmly and be made to understand that there is a law which will prevent a man who happens to have a tenement house from treating his tenant in an unsanitary way. That the law respects the poor as well as the rich and it is the duty of health officers to see that such wrongs are promptly corrected. A man who attends to his own business in a prompt and businesslike way will also attend to sanitary work, for it is simply a business transaction after all. Among all the various duties of the health officer I can think of none so important as the educational. The object of the law is to educate the people in sanitary matters. Since we have a government by the people it stands to reason if we are to have good and intelligent laws, we must educate the law makers. The intellectual standard of the laws of a land must depend upon the intellectual standard of her legal voters in a democratic community like ours. If you are to have good sanitary laws governing your health officers and people, you must have good and efficient men to administer them, and more depends upon the character of your health officer than a little. He is really the executive officer in your town on the laws pertaining to health, and it is his duty to make for a higher order of government in his department than simply having the people obey orders blindly because the state has thus declared it. He should educate his people to obey because it is better, nobler, cleaner and a higher order of life than simply obeying an order mechanically. There is such a thing as doing a good deed simply for the pleasure it brings to the giver and the people, and there is such a thing as advising good sanitary laws for the sake of cleanliness and a higher order of life and humanity, and this is one of the important features in the administration of every good and competent health officer. Again, the people who are saved from sickness and death are a tribute to the state financially. Life and labor are money—better than money. No better illustration of this can be given than the great number of needless deaths from disease during our Spanish-American War, where, Dr. Seaman tells us, we lost fourteen by disease to one slain in battle, whereas the Japanese in their late war with Russia demonstrated we were very deficient in our sanitary work for she lost only one from disease to four killed in battle, while we, during our Civil War, lost four from disease to one killed in

Digitized by Google

battle. Certain it is that the labors of our medical men in the great field of sanitary work, like Ross and others in discovering the cause of malarial fever, is a boon to humanity such as the world has hardly known before, a work which equals the great discovery of Dr. Jenner or the discovery of the application of anæsthetics in surgical work. These things all come in the line of sanitary work for humanity and more or less the work of the health officer. The sanitary work of the Japanese during the great war with Russia saved their nation, for they demonstrated for the first time in the world that a war could be carried on and have more men killed in battle than from disease. It was all that saved the Japanese nation, and they knew before they began that such rigid sanitary measures must be instituted in order to save their country. The whole world is fast coming to the conclusion quite as much as America that sanitary measures such as health officers are supposed to advise are necessary to save our people from the great and silent enemies of humanity, the great army of contagious diseases which is silently marching on while we are asleep, and it is one of the duties of the health officer to be ever watchful for the lurking germs of death among his people and at the same time instruct his people that contagious diseases are the result of careless and unsanitary surroundings which can be prevented by obeying certain rules laid down by our State Board of Health.

H. H. Seeley, M. D.

When Dr. Holton asked me to discuss a paper under this heading I was reminded of this little incident. An unfortunate fellow had been operated upon time and again until he requested that instead of sewing him up they just use hooks and eyes. I feel something the same about this subject: we ought to have it where we can open it easily.

Let me call attention to two subjects that have been of interest to me—the health officer's duties in regard to the schoolhouses and his duties in the matter of slaughter-houses.

In dealing with the schoolhouses we in the rural sections have different conditions to meet than our urban brothers. Our people are a little more independent. Thus the health officer's first duty is to be a teacher, a moulder of public opinion. Until the voters see why changes are necessary it is not strange that we hear: "It was good enough for me, and my father before me, and I guess that it is good enough for the children." Well, as a rule it isn't, any more than the past generation's way of living is good enough for the present. Our country schools do not quite keep up with the times. How can we get after these? Publicity is as good for a health officer to use as it is for the manufacturer of a new breakfast food. We can get hold on our schools by using space in our town reports as the law directs. Facts that appear in black and white make people take notice and ask questions, and that is what we want them to do. Keep after the schoolhouses, look out for their ventilation, their heating and their

Digitized by Google

lighting. Talk with the teachers and get them interested, give them instruction which may help them to an early recognition of symptoms of contagious disease. Back them up in their attempt to keep the sick scholars out of the schoolroom. Too much stress cannot be laid upon our duty in keeping the morals of the school clean. Clean up the obscene drawings and carvings with their attendant verses and remarks.

What are my duties in handling slaughter-houses? The rules promulgated by the Health Board give us our standard but how can we bring these conditions about? These factors are helping us. The people, through the press, are learning concerning "the fly which won't wipe its feet" and what it does; they are learning other things concerning carelessness in handling meat, and as the result they are demanding cleaner meat. We ought to see that the meat is kept clean and let the butchers see that this is to their interest. In sending out the rules of the State Board we should write in the names of the butchers and call their attention to the fact that the state is making a personal case for each of them, that it is really in earnest.

What to do with the offal is a perplexing question. The offal in a slaughter-house is one of the by-products and a valuable one, too, it can be made. The Western butcher is praised for his thrift in turning it into a thousand and one things, but the Vermont butcher shortens the process and turns his into pork. It is not a good thing to feed the pigs upon at all. We all know that but it is in keeping with our manner of feeding pigs. Did you ever know of a hog that was kept in a sty which was anything more or less than a rendering plant and a filthy one at that? Where then lies our duty? Get the butchers to bury their offal when we can. If they insist upon feeding it to the hogs we can insist that the pens be far enough away so that no odor will come to the slaughter-house.

We are the guardians of the public health. As we look upon the improved conditions in our methods of living we can see that the health officer has done his share towards making life better. His problems are being met but it remains with him as always to strive for greater things.

Dr. G. F. B. Willard, Vergennes.

I would like to ask Dr. Peck why he laid all of the errors to the young doctors?

Dr. C. W. Peck, Brandon.

That idea was brought up by a little incident which happened several years ago. I was called upon to see a case where the attending physician was in doubt as regards the diagnosis. The case was so far advanced that it was very hard to discover whether it was scarlet fever or not. However, I went to see the patient, diagnosed the case as scarlet fever and placarded the house. I found that these people had been entertaining guests two weeks or so before, and previous to their visit had had a severe attack of

Digitized by Google

the itch. I inquired who the attending physician was and I discovered he was a young practitioner, and it occurred to me that he had overlooked a case of scarlet fever and called it the itch. My opinion is the young physicians in the state of Vermont have not had an opportunity to diagnose scarlet fever or smallpox. We do not have these diseases at the present day as we did thirty or forty years ago, consequently the young physicians rarely see a case of scarlet fever or smallpox. We have not had more than six or eight cases of scarlet fever in the town of Brandon during the last sixteen or eighteen years. Some of our physicians have been puzzled in making a diagnosis between chicken pox and smallpox. I may not know quite as much about the difference between these two diseases as others do, but I think I know when I see a case of chicken pox and when I see a case of smallpox. I have seen during my practice a great many cases of scarlet fever, smallpox and chicken pox and when I look around and see the boys who have not had an opportunity to study those diseases, I cannot help but feel that there is every chance for an error in diagnosis. I do not hold that an old man cannot be an old fool, for I think he can.

E. A. Graves, Sunderland.

We have for a number of years been educating the health officers of the state of Vermont. I think we ought to educate the children of the state of Vermont. Dr. Probst spoke of it but not strongly enough. I think it ought to be the duty of the State Board of Health to frame a bill and put it in the hands of every school teacher in the state, making it as patriotic for the school children to lay down their lives for the health of the community as for the protection of the flag.

Dr. C. M. Ferrin, Essex Junction.

Is it the duty of the health officer to make a special examination of a case of diphtheria or scarlet fever that is reported to him before he puts up his quarantine notice?

D. T. Bates, Pownal.

I am not a physician. How am I to tell whether the case reported to me as diphtheria is diphtheria or scarlet fever? How is the layman to determine whether the case is a genuine case of infectious disease?

Mr. H. L. Stillson, Bennington.

Laymen as health officers have all the advantage in the world in regard to some matters. He is not troubled by any question of ethics. He is a business man and does the business in a businesslike way. The health officer should be a business man and the younger men are going to have more business methods about them than the older ones.

Suppose a case of scarlet fever is reported to me. If it is the family

Digitized by Google

physician who reports that case, I go with him and look the case over, and we fix up the matters together, and we decide together what is best to be done with the bread-winner. If the case is reported to me by other than the family physician, I get the family physician and go with him just the same. As I understand the law, the health officer can take any number of physicians as council, but I have always observed the law of ethics, that the attending physician should always be present. Lately I have asked the family what their wishes were with regard to the physicians seeing the case. We have been having quite an epidemic of scarlet fever in Bennington. A teacher in one of our schools allowed a child having a distinct rash to sit in the schoolroom with the other pupils during examination week, the second week in June. Needless to say we had a great many cases develop from this exposure. We have had all the physicians in town see the cases. One physician diagnosed the case as positive rubeola; nothing else. Fortunately it was an old practitioner who had made that diagnosis. I presume I have seen five hundred cases of scarlet fever. Our law says—scarlatina. Every time I put up a placard scarlatina, I have had to answer numerous questions, such as these—"Is that scarlet fever?" "Yes." "Why do you call it scarlatina?" "Because the card says so." "Then they are not very sick, are they?" I think scarlet fever should be called scarlet fever. I think a law should be passed at the next session of the legislature making it obligatory that scarlet fever should be quarantined as scarlet fever and not as scarlatina.

Health officers should have confidence in the practitioners of the town. When you are called upon to quarantine a case of contagious disease, take one, two or three physicians along with you to confirm the diagnosis made; at any rate take along as many as you need to satisfy the public the disease is diagnosed correctly and placarded accordingly.

Mr. Bates of Pownal asks the question, Has a layman the right to quarantine a family without the attendance of a practicing physician?

My answer is, No.

Mr. Bates asks further, If the practicing physician notifies the health officer, but the physician is unable to attend to the placarding, is it right and lawful for the health officer, being a layman, to go ahead and placard the house for the disease given by the physician reporting the case to him?

I have only put up three or four signs in the whole seventeen years in which I have been health officer. The physician puts up the card. The attending physician can placard the house without any friction. He is able to talk with the family and explain the necessity for placarding and the law is complied with without any hard feeling on the part of the party quarantined, and there is better satisfaction all around.

Dr. C. M. Ferrin, Essex Junction.

When you call in one or more physicians to confirm or make a diagnosis, who pays the bill?

Digitized by Google

H. L. Stillson, Bennington.

Whenever I call in a physician to see a case the town of Bennington pays the bill, and I think the town can be made to pay such bills.

S. W. Butterfield, Perkinsville.

My town is peculiarly situated. We have not a practicing physician in our town but have to depend upon five or six neighboring towns for medical attendance. In reporting to me, I have never found there has been a notice put up. What shall I do?

Dr. E. S. Albee, Bellows Falls.

I was called in consultation one Sunday night to see a case where the attending physician was uncertain as to diagnosis. He was not sure whether it was scarlet fever or diphtheria, or a combination of the two diseases. We sent a culture up to the laboratory at Burlington and the report came back—negative. Then, of course, they gave up the idea of its being diphtheria. There was some trouble between the family and the attending physician and another physician was called in to attend the case. At this time, it was a pretty old case to diagnose scarlet fever. We kept the man in until the end of two weeks. The last physician said there was no desquamation; what did they have? I said I didn't know. He said he was willing to let the man out as he thought it was safe. I said I should keep him there and if they wanted to appeal to the State Board of Health, they could. They did so appeal. Dr. Holton came up to Bellows Falls and examined the case and it was left with me, if they did not desquamate within four or five days, to let them out. I do not think I should be called upon in my official capacity as health officer, to diagnose the case. I do not consider it my duty to examine cases where I am called upon to placard the house in my official capacity as health officer. I quarantine the cases for the diseases as reported to me by the attending physician and do not consider it a part of the duties of the health officer to make a personal examination in order to confirm or disagree with the diagnosis made by the attending or family physician.

C. B. Kent, Dorset.

After listening to the remarks just made, I feel as though I was in the midst of a Methodist camp meeting. I haven't any advice to offer, but I have a little advice to ask. It seems to me during my office as health officer, only the most knotty questions have come to my attention. I am asked a great many times to quarantine a house for this thing and that, and sometimes I really don't know how far my official capacity carries me. Only last week I was asked to quarantine a boarding house which was infected with bedbugs. A man came to me and asked me to use my power of health officer in quarantining or disinfecting the boarding house. The

Digitized by Google

bedbugs were so thick there that you could scoop them off the walls. I wrote Dr. Holton asking him what should be done and he replied if he was in my place, he would write the proprietor of the boarding house rather than go. Perhaps some of you health officers can tell me something to do to remedy this trouble.

Dr. C. W. Peck, Brandon.

I think Dr. Albee is wrong. When I have a case reported to me, I go and examine it. They almost always seem very glad to let me in. Some little time ago I had a case of measles reported to me. I immediately went and examined the case and found instead a case of scarlet fever. What would have been the result if I had simply placarded that house for measles? Scarlet fever is no trivial affair to have floating around a community. We do not have it down our way; I choke it off. I never let it get started in my town. The health officer should stand squarely on his feet and be sure of the case before the house is placarded. I had a little trouble this last year. The streets were being sewered; one man thought he would take his own time in connecting his house with the city sewer. I served a notice on him, ordering him to connect his house within a specified time. He went out of the state, neglecting to comply with the request. I sent him registered letters asking him to connect his house with the sewer, but he would not accept the registered mail. I got all ready to put the sewer in myself and charge it up to him, when he decided that he could put it in cheaper than we could do it for him. I would suggest that every health officer stand squarely on his feet, be just, be positive, and do the right thing. I think Dr. Albee needs a little more spunk.

Dr. Henry D. Holton.

It seems to me a notice should be served on the proprietor of that boarding house that a nuisance existed in the presence of this vermin and the same should be abated. It is perfectly legitimate for the health officer to order the abatement of such a nuisance and also see that the order is carried out. The same thing is applicable to the subject of lice in our schools. Sometimes they think the State Board will not believe it. Some years ago a certain party in one of our school districts sent a bottle of them to the president of the State Board of Health. As soon as the rest of the members heard of it, we ordered him disinfected. It is a communicable condition and you should serve a written notice on the head of the family where such a nuisance exists, ordering the school children kept at home until rid of the lice. At the same time you should write to the secretary of the school board that you have prohibited them from attending school. This is, of course, necessary so the board will be aware of their absence from school as well as the cause for their absence.

Regarding the matter of the health officer going in and looking over a case prior to placarding a house for a contagious disease. It requires a good deal

Digitized by Google

of caution and wisdom. I have known serious trouble to come up because a health officer, a doctor, went into a house to see a patient who was being attended by a brother physician. The best and safest way is to write or telephone or call upon the attending physician and make some arrangements for a visit to the sick room in order to be sure of the correct placarding of the premises. As Dr. Peck has just said he does not prescribe, but goes in in order to be sure that the correct placard is placed upon the premises. If the health officer, a practicing physician, goes into a house where a contagious disease is and looks over the case, he may drop some word that is carried immediately to the family physician, which gives rise to discord, so you will see you should always go with the family physician when you visit a sick room in anticipation of placarding a house.

Not so very long ago a case of measles was reported in a certain town and the health officer quarantined the house. An old woman broke the quarantine and went into the house. She immediately said: "That is not a case of measles. It is canker rash." That information was reported to the health officer. Instead of taking another physician in consultation and going with the attending physician, he went there alone and changed the sign to scarlet fever. Of course, that caused a row at once. I was obliged to go up there to straighten out the business. The peeling process was going on nicely; there was an abscess in the ear, etc., so there was no question but that it was a case of scarlet fever. I saw the doctor who made the mistake and I said, "I am sorry, but I guess we shall have to call it scarlet fever." He felt very unpleasant about the matter for some time. Within six or eight months the health officer moved out of that town and this doctor who had made the mistake in diagnosis was appointed health officer. About a year from the time this case occurred, a case of scarlet fever developed and was reported. On his report he added: "This is in the house where we had a case of scarlet fever a year ago and I do not think it was properly fumigated." There is only one class of people who are as sensitive as physicians and they are musicians. With regard to the case Dr. Albee spoke of I might say the case had been running a little over two weeks and there was no evidence of desquamation. The patient was a man thirty years of age, and his wife said he had had no desquamation. She had scrubbed him every day. How much she had scrubbed off I do not know. I am not sure what he did have. One doctor described it so I diagnosed the case as scarlet fever, and another described it so I could not be certain just what it was, so I said if you do not see any signs of desquamation within a certain time, release the family.

Dr. E. F. Norcross, Island Pond.

Where the attending physician placards the house and does not call upon the services of the health officer, is the physician who does the placarding entitled to the pay?

Digitized by Google

Dr. Henry D. Holton, Brattleboro.

No, sir.

Dr. G. H. Branch, Grand Isle.

In defense of the young practitioners of the state of Vermont, let me state a little incident which occurred not so very many years ago in my town.

An old man walked into my office one day and said he had a severe cough and loss of appetite and strength. I made a careful examination of the patient and asked him who had been doctoring him and he mentioned the name of an old doctor. After I completed my examination, I decided to send a specimen of his sputum down to the State Laboratory. The report came back—numerous tubercle bacilli. Now this old man who had been doctoring this fellow has been held up as an authority on tuberculosis for years past. I sent the man back home and he died within eighteen months of tuberculosis. I want to say that the old practitioners and often those who are supposed to be authority on the subject make mistakes in their diagnoses sometimes.

Dr. E. E. Whitaker, Newport.

I have been very much interested and pleased with the remarks of our secretary in regard to the duties of the health officer in making the diagnosis when these diseases are reported by the attending physician. I should consider that I had insulted a brother practitioner if I had gone in and made a diagnosis by myself, irrespective of the attending physician. If the attending physician is in doubt and wants my help or advice, he will call upon me, and I will give him the best I have got.

E. A. Graves, Sunderland.

How far has a health officer the authority to go into a family and clean out an infection of lice?

Dr. H. D. Holton, Brattleboro.

He would probably catch them if he went there. You can usually do the business by letter just as well.

H. C. Warren, Marlboro.

I had occasion last winter to put up a quarantine notice for scarlet fever. A day or two afterwards I called upon the family and saw the quarantine notice was taken down from the door. I inquired where it was. I found it was in the kitchen. I inquired who put it there but no one knew anything about it. None of the family had put it there and they apparently knew nothing about it. I notified the state's attorney of the county. He wrote back to me that in order to bring a prosecution, I

Digitized by Google

must have seen the quarantine removed or be able to procure credible witnesses to the performance; otherwise I would have to nail it up again.

Dr. C. S. Caverly, Rutland.

Did any one go out of the house or go into the house during this time?

H. C. Warren, Marlboro.

I don't think any one went into the house, but I have heard someone went into the dooryard.

Dr. C. S. Caverly, Rutland.

If the quarantine is broken, you can look for redress to the head of the family.

I understood Mr. Stillson to say that scarlet fever was to be quarantined as scarlatina. Circulars are printed and distributed by the secretary of the State Board of Health and Circular No. 9 states: Scarlet Fever; called also Scarlatina, Canker Rash, etc. I think Mr. Stillson must have got hold of some old circulars or have been mistaken regarding the matter.

SPECIMENS EXAMINED AT LABORATORY OF HYGIENE DURING SECOND QUARTER, APRIL, MAY AND JUNE, 1909.

SUMMARY TABLE.

WATER.

Ground Waters:		
Normal	33	
Showing present pollution	4	
Showing past pollution	17	
Showing past and present pollution	26	
Surface Water:		
Normal	10	
Polluted	6	
Total		96

SPUTUM FOR TUBERCLE BACILLI.

Male:		
Positive	44	
Negative	192	

Digitized by Google

Female:		
Positive	22	
Negative	163	
Sex not stated:		
Positive	4	
Negative	22	
Total		447

CULTURES FOR DIPTHERIA BACILLI.

Positive	67	
Negative	279	
Suspicious	3	
Total		349

BLOOD FOR WIDAL REACTION.

Positive	16	
Negative	117	
Total		133

BLOOD FOR MALARIA.

Positive	1	
Negative	1	
Total		2

MILK AND CREAM.

Above standard	105	
Below standard	1	
Total (detail table following)		106

CREAMERY BY-PRODUCTS FOR PASTEURIZATION.

(Skim milk and Buttermilk).

Positive	10	
Negative	4	
Total		14

FOOD.

Legal	48	
Adulterated or misbranded	9	
Total (detail table following)		57

Digitized by Google

DRUGS.

Legal	17	
Adulterated or misbranded	8	
Total (detail table following)		25
MEDICO-LEGAL CASES (DETAIL TABLE FOLLOWING)		53

LIQUORS EXAMINED UNDER PROVISIONS OF THE FOURTH CLASS LICENSE LAW.

WHISKEYS.

Passed	227
*Not passed	34

BRANDIES.

Passed	12
*Not passed	20

MALT LIQUORS.

Passed	154
*Not passed	—

MISCELLANEOUS LIQUORS.

Passed	184	
*Not passed	9	
Total		640

*Many of these were misbranded and were later passed on being properly labeled.

MISCELLANEOUS ANALYSES.

Positive	29	
Negative	82	
Unclassified	5	
Total		116
Total number of examinations made		2038

Digitized by Google

Milk—Below Standard.

Results of Examinations Made at the Laboratory of Hygiene during Second Quarter, 1909

Laboratory Number	Date	Obtained From	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
69831	6-17-09	W. E. Mattison	Bennington	13.5	9.1	4.4	Dirty	

Total 1.

Digitized by Google

MILK—STANDARD OR ABOVE

RESULTS OF EXAMINATIONS MADE AT THE LABORATORY OF HYGIENE DURING SECOND QUARTER, 1909

Laboratory Number	Date	Obtained From	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
67668	3-28-09	B. E. Somers	Colchester	Cream		22.0		Quality very ordinary.
67817	4- 3-09	A. Martindale	South Vernon	13.80	9.00	4.8	Clean	
67935	4- 7-09	B.	Windsor	15.00	9.40	5.6	"	
67936	"	C.	"	13.04	8.64	4.4	"	
67937	"	D.	"	Cream		42.0	"	
68397	4-20-09	Archie McNeill	Colchester	12.6	9.0	3.6	"	
68398	"	Fred Cilley	"	Cream		29.0		
68399	"	Mrs. A. J. Hamilton	"	Cream		34.4		
68400	"	Minney Thompson	"	Cream		31.0		
68401	"	C. C. Boclair	"	Cream		35.0		
68402	"	Clark Wright	"	Cream		33.8		
68403	"	A. J. Thornton	"	Cream		27.8		
68362	4-19-09	C. B. Hurnes	Rockingham	13.9	9.1	4.8	Clean	Richardson, producer.
68363	"	"	"	13.1	9.1	4.0	"	D. H. Taylor, producer.
68364	"	Dennis Brisbane	"	14.6	8.2	6.4	"	Top sample—unmixed.
68365	"	C. B. Hurnes	"	12.7	8.7	4.0	"	J. F. Alexander, producer.
68367	"	Hawley & Torrey	"	12.11	8.86	3.25	"	W. O. Bugbee, producer. Barely passable in fat
68368	"	C. B. Hurnes	"	12.6	8.6	4.0	"	W. W. Barry, producer.
68370	"	Albert Whittier	"	12.6	8.8	3.8	"	
68371	"	C. H. Spaulding	"	12.5	8.5	4.0	Refractometer 38.2. Clean	H. A. Thompson. Barely passable in solids.
68420	4-20-09	"	"	14.3	9.8	4.5	Clean	
68421	"	"	"	13.3	9.2	4.1	"	H. W. Osgood, producer.
68422	"	A. G. Rice	"	13.6	9.0	4.6	"	W. Ware, "
68423	"	"	"	14.8	9.8	5.0	"	B. T. Phelps, "
68424	"	"	"	12.9	8.65	4.25	"	J. E. Brosnahan, "
68425	"	"	"	14.9	9.2	5.7	"	R. G. Hammond, "
68426	"	"	"	(15.0)	(7.4)	7.6	"	G. G. Bower, " Top sample—unmixed.
68427	"	"	"	13.8	9.3	4.5	"	A. L. Mack, "
68428	"	"	"	15.1	9.7	5.4	"	E. A. Jorffs, "
68429	"	"	"	12.9	9.3	3.6	"	W. H. Wilson, "
68430	"	"	"	15.5	10.0	5.5	"	G. E. Spencer, "
68431	"	"	"	12.9	9.3	3.6	"	C. E. Howard, "
68653	4-28-09	J. N. Wright, Jr.	"	12.7	9.2	3.5	Normal	
68654	"	H. S. Wright	"	14.0	9.7	4.3	"	
68655	"	"	"	13.3	9.8	3.5	"	W. J. Wright, producer
68659	"	Hawley & Torrey	"	(16.0)	(9.7)	6.3	"	Unmixed
68660	"	G. W. Peck	"	13.2	9.8	3.4	"	O. L. Fisher, producer.
68661	"	"	"	13.8	9.6	4.2	"	R. Metcalf, "
68662	"	"	"	12.6	9.2	3.4	"	F. Farr, "
68664	5- 5-09	F. E. Gammell	"	12.4	8.6	3.8	"	

Digitized by Google

Laboratory Number	Date	Obtained From	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
69504	6- 4-09	R. C. Gloyd	Richmond	12.6	9.2	3.4	Normal	
69708	6-11-09	W. I. Cromie.	Burlington				"	No preservative detected.
69747	6-15-09	J. Howard	Bennington	Cream		35.0	"	Microscopically normal.
69748	"	W. B. Sheldon	"	13.7	9.4	4.3	"	" "
69749	"	S. Everett Harwood	"	Cream		22.0		
69750	"	Philip Jacobs	"	13.0	9.0	4.0	Normal	Microscopically normal.
69751	"	J. W. Rockwood	"	13.7	9.1	4.6	"	" "
69752	"	Hiland Fay & Son	"	13.3	9.1	4.2	"	" "
69753	"	Filmore Farms	"	13.9	9.3	4.6	"	" "
69754	"	John Scully	"	13.1	9.1	4.0	"	" "
69755	"	C. M. Amadon	"	Cream		35.0		
69756	"	"	"	Cream		40.0		
69757			"	13.9	9.2	4.7	Normal	Microscopically normal.
69758	"	Geo. E. Davis	"	Cream		36.0		
69759	"	Rice Bros.	"	Cream		44.0		
69760	"	L. A. Briggs	"	14.9	9.1	5.8	Normal	Microscopically normal. Top sample.
69761	"	O. O. Oakes	"	12.4	9.1	3.3	"	" "
69762	"	M. J. Cone	"	13.6	9.0	4.6	"	" "
69763	"	R. A. Crawford	"	13.1	8.9	4.2	"	" "
69764	"	Shadow Brook Farm	"	12.7	8.9	3.8	"	" "
69765	"	" " "	"	Cream		27.0		
69766	"	J. B. Parsons	"	13.2	9.1	4.1	Normal	Microscopically normal.
69768	"	W. J. Hicks	"	12.6	8.9	3.7	"	" "
69769	"	Geo. H. Moore	"	13.7	9.3	4.4	"	" "
69770	"	F. A. Greenslet	"	12.7	8.5	4.2	"	" "
69767	"	E. Wheeler Rice	"	13.9	9.2	4.7	"	" "
69771	"	J. B. Parsons	"	Cream		31.0		
69816	6-17-09	S. L. Robinson	"	14.8	9.4	5.4	Sour when rec'd. Normal	
69817	"	W. C. Robinson	"	13.3	8.7	4.6	" "	
69818	"	F. D. Eaton	"	13.4	8.6	4.8	" "	
69819	"	Clayton Reed	"	13.4	9.0	4.4	" "	
69820	"	F. E. Stewart	"	14.2	9.4	4.8	" "	
69821	"	"	"	Cream		27.0	" "	
69822	"	T. P. Wood	"	Cream		41.0	" "	
69823	"	Joe Hathaway	"	Cream		60.0	" "	Quality excellent.
69824	"	Miss Clara Barber	"	Cream		34.0	" "	
69825	"	Cromack & Bruso	"				Too sour for analysis.	Clean.
69826	"	John Craven	"	13.2	9.0	4.2	Sour. Normal	
69827	"	H. A. Michaels	"	Cream		25.0	" "	
69828	"	C. A. Carpenter	"				" "	Too sour for analysis. Cow No. 2.
69829	"	"	"				" "	Too sour for analysis. Cow No. 1.
69830	"	J. M. Barber	"	15.0	9.5	5.5	" "	

Digitized by Google

Milk—Standard or Above—(Continued)

Laboratory Number	Date	Obtained From	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
69982	6-17-09	W. M. Mattison	Bennington	Cream		50.0	Sour. Normal	Quality excellent.
69985	6-23-09	F. Landon	Bristol	13.5	9.0	4.5	" "	
69987	6-25-09	David Shattick	"				Decomposed	
69988	"	W. J. Rider	"				"	
69989	"	H. Hewitt	"				"	
69992	"	C. E. Brooks	"				"	
69993	"	Odell Estes	"				"	
69994	"	Geo. Angier	"				"	
69995	"	O. Q. Bicknell	"				"	
69996	"	R. S. Smith	"				"	
69997	"	Truman Varney	"				"	
69998	"	G. Small	"				"	
69999	"	D. Layne	"				"	
70000	"	A. M. Norton	"				"	
70001	"	A. Kilbourn	"				"	
70002	"	E. Boynton	"				"	
70003	"	L. E. Jacobs	"				"	
70004	"	E. C. Norton	"				"	
70005	"	E. W. Meader	"				"	
70006	"	F. W. Matthewson	"				"	
70007	"	N. J. Hill	"				"	
69990	"	Mrs. C. River	"	12.5	9.2	3.3	Normal. Sour	
69991	"	D. E. Meader	"	12.7	9.3	3.4	" "	

Total, 105.

Digitized by Google

Pasteurization of Creamery By-products (Skim and Buttermilk)

Results of Examinations Made at the Laboratory of Hygiene during Second Quarter, 1909

Laboratory Number	Date	Creamery	Town	Heated to 170° F.	Not Heated to 170° F.	Remarks
69588	6- 9-09	Champlain Valley	Fairhaven	1	.....	Skim milk
69642	6-10-09	C. M. King	Benson	1	.....	" "
69643	"	Champlain Valley, Station 5	.....	1	.....	" "
69644	"	Quail Station, No. 2	West Haven	.....	1	" "
69645	"	Station No. 3	West Haven Center	.....	1	" "
69646	"	Middletown	Middletown	1	.....	" "
69811	6-18-09	Batchelder & Snyder Co.	Richville	1	.....	Buttermilk
69812	"	Capital Creamery	Hortonville	1	.....	Skim milk
69813	"	" "	"	1	.....	Buttermilk
69814	"	Orwell Creamery Co.	.....	1	.....	"
69860	6-19-09	Rutland, Leigh Hunt	.....	1	.....	Skim milk
69861	"	Rutland County	Pittsford	1	.....	" "
70093	6-28-09	Elgin Spring	Panton	.....	1	Buttermilk
70094	"	Hudson Valley	Poultney	.....	1	Skim milk
			Total...	10	4	

Digitized by Google

RESULTS OF EXAMINATIONS MADE AT THE LABORATORY OF HYGIENE DURING SECOND QUARTER, 1909

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
69027	5 14-09	Skimmed Milk submitted by	C. E. Lazell, White River Junction					Fat .025 per cent
67708	3 30-09	Maple Sugar	F. C. Clark, Brattleboro	Clifton Dalrymple, Brattleboro.	1			
67709	"	" "	" " "	H. Knapp "	1			
67940	4- 7-09	" " submitted by	Dr. Stoddard, Shelburne		1			
69159	5-20-09	Milk " "	Albert Deane, No. Pownal		1			
67711	3-30-09	Maple Sugar " "	True & Blanchard, Newport		1			
67712	"	" " " "	" " "		1			
67713	"	" " " "	" " "		1			
69201	5-18-09	" " " "	A. E. Myatt, Burlington		1			
68511	4-24-09	Port Wine " "	C. S. Hastings, St. Johnsbury	P. C. Crowley & Co., Boston	1			A natural wine of ordinary quality
69269	5-25-09	Vinegar " "	Spaulding, Kimball Co., Burlington			1		Low in acidity 2.88 grms. in 100 cc.
69348	5-28-09	Milk " "	Clarena Morse, Bennington		1			
69397	5-29-09	Cream No. 1 " "	F. A. Tracey, Hinesburg					Fat 35.0
69398	"	" " 2 " "	" " "					" 32.0
69429	6- 2-0	Tissue from Cow	J. Alexander, Williamstown					Tubercular
69434	"	Cream submitted by	W. H. Valliquette, Rutland		1			Fat 30.0 per cent
69435	"	Maple Sugar " "	L. C. Stanton, St. Johnsbury					Insufficient sample
69436	"	" Syrup " "	" " "					" "
69437	"	" Sugar " "	" " "					" "
69482	6- 4-09	Butter " "	A. G. Mathen, Bennington					Sample too small for analysis
69583	6- 9-09	Maple Syrup " "	C. A. Leland, Springfield		1			Glucose absent
69784	6-16-09	Milk " "	E. C. Bordo, Burlington					Total solids 12.7. Solids not fat 9.0. Fat 3.7. Dirty
69785	"	" " " "	" " "					Total solids 12.5. Solids not fat 8.9. Fat 3.6. Dirty
69885	6-20-09	Cream " "	Wright & Ferguson, Bristol		1			Fat 32.0
69886	"	" " " "	Maple Tree Sugar Co., Rutland					" 50.0
69915	6-21-09	" " " "	" " " "					Too sour for analysis
70016	6-28-09	Milk " "	Steele & Butler, Burlington			1		Total solids 12.8. Solids not fat 9.0. Fat 3.8. Dirty
70055	6-30-09	" " " "	" " "			1		Total solids 14.28 Solids not fat 8.40. Fat 5.8. Dirty
70070	"	" " " "	David Cosgriff, "			1		Total solids 13.8. Solids not fat 9.3. Fat 4.5. Dirty
66680	"	Essence of Lemon	E. R. Crandall, Winooski			1		Lemon Oil 3.7 per cent.
66679	"	Vanilla Extract	" " "		1			
66697	"	Olive Oil	Marcotte Bros., "	Burl. Drug Co., Burlington	1			

Digitized by Google

Foods (Continued)

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
66696	6-30-09	Vanilla Extract	Marcotte Bros., Winooski		1			
66700	"	Lemon "	" " "			1		Lemon oil 4.0 per cent.
66711	"	Vanilla "	Shanley & Estey, "	F. H. Lowell & Co., N Y	1			
66712	"	Lemon "	" " "			1		Lemon oil 4 2 per cent.
67721	"	Vanilla "	Gill Bakery, Rutland		1			
67727	"	Cottonseed Oil	" " "	Proctor & Gamble, Cincinnati	1			
67726	"	Standard Orange Extract	H. B. Carpenter, Rutland	J. Middleby, Jr, Boston		1		No orange oil.
67723	"	Imitation Vanilla "	" "	Mosier Bros., Rutland	1			
67728	"	Gilt Edge Vinegar	Jerry Bros., "	E. D. Keyes & Co., Rutland	1			
67720	"	Vanilla Compound	Schmitt & Minch "	Mosier Bros, "	1			
67724	"	Terpeneless Lemon Extract	" " "	" " "	1			
97725	"	Oil Lemon	Murdick & Perkins, "	H. A. Johnson & Co., Boston		1		Not oil of lemon.
67722	"	Imitation Vanilla Extract	" " "		1			
69634	6-10-09	Vanilla Extract submitted by	L. H. Lombard, St. Albans		1			
69635	"	Lemon Extract " "	" "		1			
69636	"	Mustard " "	" "		1			
69637	"	Ginger " "	" "		1			
69638	"	Cinnamon " "	" "		1			
69639	"	White Pepper " "	" "		1			
67714	6-30-09	Butter	H. B Carpenter, Rutland	Dunn, Rutland	1			
67715	"	"	Gill Bakery, "	E. R. Smith, Rutland	1			
67716	"	"	H. Breckenridge "	Hulett, "	1			
67717	"	Lard	Murdick & Perkins, "	J. Dold, "	1			
67718	"	" Shield Brand	H. Breckenridge, "	Armour & Co., Chicago	1			
67719	"	" White Rose	Gill Bakery, "	J. Dold, Rutland	1			
					48	9		

Total, 57

Digitized by Google

Medico–Legal Cases

Specimens Examined by Order of a Superior Judge or the Attorney General

Laboratory Number	Date Received	Date Reported	Town	Material	Examined For	Result	Ordered By	State' Attorn
68121	4-14-09	4-17-09	Westford	Autopsy	Cause of death	Acute nephritis	Taylor	H. B. Shav
68313	4-18-09	4-19-09	St. Johnsbury	Jamaica ginger	Alcohol	72.10% alcohol by volume	Sargent	Simonds
68314	"	"	"	"	"	72.46% " "	"	"
68315	"	"	"	"	"	50.06% " "	"	"
68316	"	"	"	"	"	80.44% " "	"	"
68499	4-24-09	5 -4-09	Rutland	Cow's liver	Arsenic	Present	"	J. C. Jones
68500	"	"	"	" spleen	"	"	"	"
68501	"	"	"	" stomach	"	"	"	"
68502	"	"	"	" paunch	"	"	"	"
68503	"	"	"	" "	"	"	"	"
68504	"	"	"	Feed	"	"	"	"
68505	"	"	"	Discharge from bowels	"	"	"	"
98506	"	"	"	Feed mixture	"	"	"	"
68507	"	"	"	Paris green	"	"	"	"
68508	"	"	"	Feed mixture	"	Negative	"	"
68509	"	"	"	Oats	"	"	"	"
68510	"	"	"	Ground feed	"	"	"	"
68761	5- 1-09	5- 4-09	Sheldon	Autopsy	Cause of death	Ruptured aneurism	A. A. Hall	Elmer Joh
68774	5- 3-09	"	Burlington	"	" "	Carbolic acid poisoning	Sargent	H. B. Shav
68891	5- 9-09	5-10-09	"	Smear	Spermatozoa	Negative	"	"
68892	"	"	"	"	"	"	"	"
68893	"	"	"	"	"	"	"	"
68894	"	"	"	Clothing	"	Positive	"	"
69174	5-19-09		Rutland	Cow's stomach	Poison	Negative	"	J. C Jones
99175	"		"	" intestine	"	"	"	"
69210	5-22-09	5-25-09	Pownal	Autopsy	Cause of death	Fracture of skull	Sargent	Wm. Meag
69238	5-24-09	"	Hyde Park	"	" "	Bullet wound	"	"
69297	5-26-09	5-28-09	Bennington	"	" "	" "	"	Wm. Meag
69298	"		Pownal	Pick handle	Blood	Negative	"	"
69299	"		"	Wrapper of pick handle	"	"	"	"
69358	"		"	Hair	"	Positive	"	"
69359	"		"	Cap	"	Negative	"	"
69360	"		"	Earth	"	"	"	"
69361	"		"	Pipe	"	"	"	"
69493	6- 3-09	6- 5-09	South Londonderry	Autopsy	Cause of death	No evident cause	"	J. B. Willia
69494	"	"	"	Intes. tract and kidneys	Poison	Negative	"	"
69495	"	"	"	Heart and lungs	Abnormal formation	Normal	"	"
69575	6- 8-09	6-11-09	Tunbridge	Stomach and contents	Character of contents	Fecal matter	"	S. C. Wilso

Digitized by Google

Medico-Legal Cases (Continued)

Laboratory Number	Date Received	Date Reported	Town	Material	Examined For	Result	Ordered By	State's Attorney
69576	6- 8-09	6-11-09	Tunbridge	Autopsy	Cause of death	Due to submersion	Sargent	S. C. Wilson
69577	"	"	"	Liver and spleen, intes. tract	Abnormal formation	Normal	"	"
69578	"	"	"	Parietal bone	Fracture	Fracture of upper angle	"	"
69579	"	"	"	Material from hand	Identification	Vegetable material	"	"
69580	"	"	"	" " mouth	"	" "	"	"
69581	"	"	"	Lungs	Structure	Inflated	"	"
69606	6-10-09	7- 1-09	Montpelier	Stomach of calf	Poison	Case pending in Court	Zed S. Stanton	Benj. Gates
69662	6-11-09	.....	Burlington	Swab	Spermatozoa	Negative	.....	H. B. Shaw
69663	"	.....	"	"	"	"	.....	"
69664	"	.....	"	"	"	"	.....	"
69665	"	.....	"	Smear	"	"	.....	"
69666	"	.....	"	"	"	"	.....	"
69930	6-21-09	6-24-09	Felchville	Autopsy	Cause of death	Stab wounds	Sargent	E. R. Buck
69931	"	"	"	Stomach contents	Blood	Positive	"	"
70048	6 29 09	6-30-09	Bennington	Autopsy	For viability	"	"	Wm. Meagher

Total, 53

Digitized by Google

Drugs

Results of Examinations Made at the Laboratory of Hygiene during Second Quarter, 1909

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
66707	6-25-09	Brown's Teething Cordial	Marcotte Bros., Winooski		1			
66705	"	Indian Catarrh Remedy	" "	D. W. Sullivan, Concord, N. H.			1	Contains alcohol—not stated
66709	"	Dr. Jones' Laxative Grippe Cure	" "	Ozark Medicine Co., Springfield, Mo.			1	Acetanilid present—not stated.
66703	"	Dr. Thomas' Eclectic Oil	" "		1			
66710	"	Weeks' Break-up-a-Cold Tablets	" "				1	Acetanilid present—not stated.
66704	"	Brown's Panacea	" "		1			
66706	"	Cramp Tablets	" "		1			
66708	"	Nurses' and Mothers' Treasure	" "	P. E. Picault, Montreal, Can.	1			
66686	"	Thomas' Eclectic Oil	E. R. Crandall, "		1			
66687	"	Chamberlin's Diarrhœa Remedy	" "	Chamberlin & Co., Des Moines, Ia.			1	Contains alcohol, chloroform and morphine—not stated.
66685	"	"Lix-All"—Gray's	" "	"Lix-All" Remedy Co., Montpelier			1	Misleading statements on label.
66684	"	Pettit's American Cough Cure	" "	Pettit's Eye Salve, Fredonia, N. Y.			1	Alcohol and morphine—not stated.
66688	"	Renne's Magic Oil	" "	Dr. Herrick Farm-Medicine Co., N. Y.			1	Alcohol—not stated.
66678	"	Beef, Wine and Iron	" "	E. R. Crandall, Winooski			1	" " "
66714	"	Lime Water	Shanley & Estey, "		1			
66716	"	Tincture Iodine	" "		1			
66713	"	Alcohol	" "		1			
66715	"	Spirits Camphor	" "		1			
66683	"	Tinct. Iodine	E. R. Crandall, "		1			
66681	"	Alcohol	" "		1			
66682	"	Spirits Camphor	" "		1			
66701	"	Lime Water	Marcotte Bros., "		1			
66702	"	Tinct. Iodine	" "		1			
66699	"	Alcohol	" "		1			
66698	"	Spirits Camphor	" "		1			
					17		8	

Total, 25

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

Vol. X. No. 1.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

It is a most serious condition when the water supply of a municipality is polluted. Not only are the users of such water likely to contract typhoid fever, but gastro-intestinal, kidney and other infections arise. Knowing the existence of such conditions the law imposes upon the health authorities the duty of prohibiting the use of such water for domestic purposes. In an address by Justice Brewer of the United States Supreme Court before the Municipal Section of the International Congress on Tuberculosis held in Washington last year, he said that the duty and authority of health officials to control and remove unsanitary conditions was derived from the police power of the state, a power which had never been delegated to the general government, but remained as a power of each state. As an illustration of this he said that when a municipality's water supply was polluted, that the board of health had, under this police power, the authority to prohibit its use. It is interesting to note that this is practically the same interpretation that is given by Chief Justice Rowell to the exercise of this power by the health authorities of this state in the St. Johnsbury case. The following is a copy of his decision in this case:

"Appeal in Chancery, Caledonia County; Alfred A. Hall, Chancellor.

"Bill by the State Board of Health against the Village of St. Johnsbury and others. Decree for orator, and defendants' appeal. Reversed and dismissed as to one defendant, reversed *pro forma* as to the others, and remanded.

"Argued before Rowell, C. J., and Munson, Watson, Haselton, and Powers, JJ.

Digitized by Google

"Elisha May and Harry Blodgett, for appellants, Robert W. Simonds, state's attorney, for appellee.

"Rowell, C. J. This is a bill in chancery brought by and in the names and official capacity of the persons composing the State Board of Health against the village of St. Johnsbury and divers takers of water resident therein for the enforcement of an order made by the board prohibiting the furnishing and the use of the village water for domestic purposes till such a time. The order was made and issued in July, 1906, and recited that the Board found and was of the opinion that the water taken from the Passumpsic river at the point where the village was then taking it, and as supplied by it to the inhabitants thereof by its water system, was so contaminated, unwholesome, and impure that the use of it for domestic purposes endangered the public health; and it prohibited the drawing and the use thereof for said purposes until, in the opinion of the Board, the danger ceased. But it expressly permitted the drawing and use for laundry purposes, flushing waterclosets, sprinkling lawns and streets, watering gardens, and for stable purposes. The order was served on the trustees of the village, but not on the village itself, on the school directors, and 134 takers, a large number of whom obeyed it, but many did not, and they are defendants. After the bill was brought, the village itself, its newly elected trustees, and its clerk, were made defendants. The statute under which the order was made gave the Board the general oversight and care of all waters, streams, and ponds used by any cities, towns, villages, or public institutions, or by any water or ice companies in this state, as sources of water supply, and of all springs, streams, and water courses tributary thereto, and authorized the Board to prohibit any town, city, village, public institution, individual, or water or ice company from using water or ice from any given source whenever in its opinion the same was so contaminated, unwholesome, or impure that the use thereof endangered the public health. The statute as it was when the bill was brought, and as it now is, provides that the court of chancery 'may' on application therefor by the Board enforce any order, rule, or regulation that the Board may make under and by virtue thereof. P. S. 5496.

"The defendant Elisha May demurs to the bill for that under its allegations the board has no authority to maintain the bill in its own name; that the statute does not provide for notice of a hearing by the Board, nor for notice of any action by it to condemn the water; and that it does not allege that any notice was given in these respects. The village, its three trustees who were made defendants after the bill was brought, and Preston E. May, its clerk, jointly demur for want of equity, and because the bill does not charge them nor any of them with any shortcomings nor wrongdoings, nor contain any prayer for relief against them, and because said May is not a proper party. They further demur for substantially the same causes assigned in the demurrer of the defendant Elisha May. The bill discloses no reason for making Preston E. May a

Digitized by Google

party defendant, except that he is clerk. But that is no reason, for he is a mere recording officer, and not an administrative officer. The bill should be dismissed as to him, but without costs, for the orators are acting in their official capacity as state officers, and to make them pay costs would be making the state pay costs, which it does not do in cases distinctively of public concern certainly. But the trustees are proper parties, though not charged with anything amiss, for the bill alleges that they have the management and control of the affairs of the village, including the water system, subject to the ultimate control of the village, and therefore they can be decreed against in their official capacity if need be. North Troy School District v. Town of Troy, 80 Vt. 24, 66 Atl. 1033. And the village is, of course, a proper if not a necessary party, for it owns the water system in question. It is objected that the bill should have been brought by the state, and not by the Board. But we construe the statute to mean that it may be brought by the Board.

"It is further objected that the prohibition authorized by the statute must be absolute, and not limited; that no order could lawfully be made by the Board in restraint of the personal liberty of the citizen, for, if water was furnished by the village in its mains and taken into the houses, the board had no authority to punish those who used it for domestic purposes; that the owners of the houses had the right to drink it, and their tenants had the same right, even though forbidden by them; that the order cannot be enforced against either, nor can either be dealt with by the court for contempt; that the Board could, at most, only stop the village from pumping water into its mains, but that the court cannot effectually enforce the order even if binding without notice or opportunity to be heard, nor make the order prayed for until it has heard all the matters in issue; and that the bill does not present any issue that the defendants can answer, and demand a trial *de novo* as to the fitness of the water for domestic purposes.

" As to personal liberty, our Bill of Rights declares that government is, or ought to be, instituted for the common benefit, protection and security of the people, nation, or community, and not for the particular emolument or advantage of any single man, family or set of men who are a part only of that community. Closely allied to this fundamental proposition is the further declaration that the people of the state by their legal representatives have the sole, inherent, and exclusive right of governing and regulating the internal police of the state. This right the state did not surrender when it became a member of the Union, but retains it still; and that right, to say the least, embraces such reasonable rules and regulations, established directly by legislative enactment, as will protect the public health and public safety. And the state may invest local or state boards created for administrative purposes with authority in some proper way to safeguard the public health and the public safety. The way in which these results are to be accomplished is within the discretion of the state, pro-

Digitized by Google

vided the powers and functions of the general government are not thereby infringed, nor any constitutional provision of the state nor the United States.

"We come now to consider more especially what personal liberty is as secured by constitutional provision; and on this question we refer to Jacobson v. Massachusetts, 197 U. S. 11, 25 Sup. Ct. 358, 49 L. Ed. 643, which affirms the legality of compulsory vaccination for the prevention of smallpox. There the plaintiff in error insisted that his liberty was invaded when the commonwealth subjected him to fine and imprisonment for refusing to submit to vaccination; that the compulsory vaccination law was unreasonable, arbitrary, and oppressive, and therefore hostile to the inherent right of every free man to care for his own body and health in such way as to him seemed best; and that the execution of such a law was nothing short of an assault upon his person. But the court said that the liberty secured by the Constitution of the United States to every person within its jurisdiction does not impart an absolute right in each person to be at all times and in all circumstances wholly free from restraints to which every person is necessarily subject for the common good; that on any other basis organized society could not exist with safety to its members; that society based on the principle that every man is a law unto himself would soon be confronted with disorder and anarchy; that real liberty could not exist under the operation of a principle that recognizes the right of each individual person to use his own whether in respect of his person or his property, regardless of the injury that might be done to others; that that court had more than once recognized it as a fundamental principle that persons and property are subject to all kinds of restraints and burdens in order to secure the general comfort, health, and prosperity of the state, of the perfect right of the Legislature to do which no question was ever raised, nor on general principles ever can be raised as far as natural persons are concerned. It is said in Crowley v. Christensen, 137 U. S. 86, 11 Sup. Ct. 13, 34, L. Ed. 620, that the possession and enjoyment of all rights are subject to such reasonable conditions as may be deemed by the governing authority essential to the safety, health, peace, good order, and morals of the community; that even liberty itself, the greatest of all rights, is not unrestrained license to act according to one's own will; that it is only freedom from restraint, under conditions essential to the equal enjoyment of the same right by others, and is, therefore, liberty regulated by law.

"And this court said in Lawrence v. Rutland Railroad Co., 80 Vt. 370, 383, 67 Atl. 1091, 15 L. R. A. (N. S.) 350, concerning the right to contract, that it is not an absolute right, but subject, on general principles, to such reasonable restraint as the public good requires; that it is the general right to acquire property and by necessary implication the general right to contract concerning it, that the Constitution protects but that the protection does not make those rights absolute in all respects, for if it does,

Digitized by Google

what becomes, the court asks, of the police power, which inheres in every free government, and is based on the maxim that you shall so use your property as not to injure the rights of others, which is a universal and pervading obligation, and a condition on which all property is held, the application of which to particular conditions must necessarily be within the reasonable discretion of the Legislature; and that when such discretion is exercised in a given case by means appropriate and reasonable, not oppressive nor discriminatory, it is not subject to constitutional objection.

"It is to be noted that the demurrer admits the truth of the allegation of the bill that many analyses of the water showed it to be contaminated, unwholesome, and impure, and of such a character and quality that its use for domestic purposes was a menace and a danger to the public health. If the mode adopted by the state for the protection of the public health and safety of its local communities proves to be objectionable, inconvenient, or even distressing to some if nothing more can reasonably be affirmed against the statute, the answer is that it was the duty of the constituted authorities primarily to keep in view the welfare and safety of the many, and not to permit their interests to be subordinated to the wishes nor the convenience of the few. But there is, of course, as said in the Jacobson case, a sphere within which the individual may assert the supremacy of his own will, and rightfully deny the authority of the government to interfere with its exercise. It is equally true, however, that in every case where the constituted authorities are charged with the duty of conserving the welfare and safety of the general public, the rights of the individual in respect of his liberty may at times under the pressure of great danger be restricted by reasonable rules and regulations, as the safety of the general public may demand. And it is not for the courts to determine as to the mode likely to be most effective to protect the public against disease, unless that which the Legislature has done comes within the rule that if a statute, purporting to have been enacted for the protection of the public health, the public safety, or the public morals, has no just relation to those objects, or is unquestionably a plain, palpable invasion of constitutional rights, in which case it is the duty of courts so to adjudge, and thereby give effect to the Constitution. But the statute under consideration cannot be said to be palpably in conflict with the Constitution, state or federal; nor can it be confidently asserted that the means prescribed by it have no just relation to the protection of the public health and the public safety. It must be held, therefore, as the case is presented, that the Board has authority, if properly exercised, to restrain the defendants as it did.

"But it is said that it did not properly exercise its authority in this behalf, for that its proceedings lack due process of law, in that no notice of its proposed action was given nor opportunity to be heard afforded. The defendants do not claim, as we understand their brief, and could not well

Digitized by Google

claim, that notice and an opportunity to be heard before the Board were essential to due process of law, unless the order is final; but they claim that it is the intention of the statute to make it final and conclusive, and to give the court no authority to inquire into its correctness, but only to enforce it. But the statute does not mean that. It says, that the court 'may' enforce the order. This evidently means, not that it must enforce it as a duty, but only that it may enforce it or not in its discretion, to the proper exercise of which it must proceed on inquiry, and render judgment only after trial. So the order is not final and conclusive, and the bill presents an issue that the defendants can answer, and they may answer, and have a trial on the merits, as agreed by counsel.

"The objection that the order cannot be enforced if valid is not sustainable, for, if the court thinks it ought to be enforced, an order of its own will supervene upon it, and be of such a character that its enforcement will enforce the order of the Board.

"It is further objected in a supplemental brief that the order of the Board is not against the village, that notice of it was never served upon the village, and that consequently it cannot be enforced against the village. But notice of it was served upon the trustees of the village, and that was notice to the village, as they were its chief executive officers. Nichols v. City of Boston, 98 Mass. 39, 93 Am. Dec. 132. So notice to the president of a bank concerning matters within the sphere of his official authority is notice to the bank. Porter v. Bank of Rutland, 19 Vt. 410, 425. And the language of the order clearly embraces the village. It is: "You are hereby prohibited from furnishing, or permitting to be furnished, any water taken from the above described water source for domestic purposes in any way until," etc.—and the village was the only furnisher of water from that source for any purpose.

"Decree reversed as to Preston E. May, and bill dismissed as to him without costs. Decree reversed *pro forma* as to the other defendants. Cause remanded."

MEASLES.

The development of a large number of cases of measles at different times and under a variety of conditions as to locality, has demonstrated that the carrying distance of the contagion is not great; that it is not conveyed by clothing and that when the cases have recovered, there is nothing left in the room by which the disease can be conveyed to others who may subsequently occupy the same room, hence, that fumigation after measles is not necessary. However, great care should be exercised in the pre-eruptive stage. The watery eye, slight cough should be sufficient to cause the person to be isolated until it is determined whether or not the disease is to develop.

Digitized by Google

The following gentlemen passed August 5, a successful examination and were given certificates as licensed embalmers:

M. L. Hicks, Fairfax, Vt.
M. S. Rounds, Barre, Vt.
H. Harold Rawson, Poultney, Vt.
Howell R. Roberts, Poultney, Vt.
J. T. Sullivan, St. Albans, Vt.
C. B. Dodge, Lyndonville, Vt.
G. M. Wilson, Port Mills, Vt.
A. E. Spaulding, Woodstock, Vt.
A. F. Lamb, Randolph, Vt.
R. W. Swift, Corinth, Vt.
G. C. Johnson, Bradford, Vt.
O. M. Jones, Warren, Vt.
W. D. Cabot, Windsor, Vt.
D. J. Kane, Poultney, Vt.
Geo. Hopkins, Williamstown, Mass.
Geo. M. Clifford, Rutland, Vt.
E. L. Fleming, Pittsford, Vt.
E. J. Seamans, Fairhaven, Vt.

On an examination of Duffy's Pure Malt Whiskey at the Laboratory of Hygiene, it was found that it did not conform to the standard for whiskeys adopted by the State Board of Health, hence, could not be sold in this state. Mr. Armstrong, attorney for the Duffy company, claimed it could be sold under the standard adopted for drugs. Hence, Mr. Armstrong submitted the following question:

An applicant for a fourth-class license pursuant to Section 5131 of the Public Statutes duly specified Duffy's Pure Malt Whiskey among other spirituous liquors which he desired to be licensed to sell and duly submitted a sample in a bottle like the one herewith to the secretary of state.

This sample was duly transmitted to the director of the State Laboratory of Hygiene for analysis and report thereon pursuant to Section 5132.

If, upon analysis, such whiskey be found to be of the standard of strength, quality and purity as determined by the test laid down in the United States Pharmacopœia but not of the standard established by the State Board of Health pursuant to Section 5476 (see Food Standards Division II., Subdivision F, Spirituous Liquors d) is it free from adulteration prohibited in Chapter 226 as required in Section 5133?

Answer. No.

The following is the decision of Attorney General Sargent which will be seen to sustain the State Board of Health.

August 27, 1909.

To the Honorable, the State Board of Health, Henry D. Holton, Secretary:

Gentlemen:—Your favor of the 14th inst., enclosing for my consideration and reply inquiry at the suggestion of Hon. William W. Arm-

Digitized by Google

strong of Rochester, N. Y., was duly received, and I have the honor to advise you as follows:

Among the provisions of Chapter 219 of the Public Statutes, section 5128 provides for a licensee of the fourth class to sell intoxicating liquors by the wholesale to retail licensees. Among the classes of retail licensees are those who may sell intoxicating liquors in liquor stores at retail, 1, 2, and 6 "to be drunk on the premises," and 2 and 7 "not to be drunk on the premises," all plainly contemplating the sale of such liquors for use as a beverage; therefore, the liquors sold by the fourth class licensee are in the contemplation of the law, sold to be used for such purpose.

Section 5132 provides for the examination as to their purity and strength of all liquors to be sold by such fourth class licensees. No. 130, Acts of 1908 forbids the sale by retail licensees of any liquors not examined and approved by the directors of the State Laboratory of Hygiene under the provisions of Public Statutes 5132. The result of this is that no liquors can be sold by any licensee not purchased from a holder of a fourth class license.

The evident purpose of all this legislation is to prohibit entirely the sale of inferior, impure and adulterated intoxicating liquors for use as drink. It is common knowledge that one article included in the definition of intoxicating liquors, is whiskey. This common knowledge makes the law so.

State vs. Munger, 15 Vt. 290.
State vs. Labounty, 63 Vt. 374.

Therefore, the foregoing legislation applies to the sale of whiskey as a drink.

How, under the law, shall the quality of whiskey, offered for sale as a drink, be determined? By P. S. 5467, "all medicines and preparations recognized in the United States Pharmacopœia . . . . for internal or external use," are drugs. Whiskey is one of the medicines and preparations recognized in the United States Pharmacopœia for internal use, and is, therefore, a drug.

By the same Public Statutes 5467, "the word 'food' shall include all articles . . . . used for . . . . drink . . . . by man or beast." It is common knowledge that whiskey used for drink by man, and this common knowledge makes the law include whiskey in the statutory class, "food."

Public Statute 5476 imposes upon the State Board of Health the duty of adopting "such rules as it deems necessary . . . . for the . . . . examination of . . . . foods. . . . . " In order to determine whether a given article is inferior, impure or adulterated, there must be some standard description of the article with which it does or does not conform. Therefore, as the basis for the examination of a sample of whiskey as an article of food, i.e. an article used for drink, the State Board must determine what qualities the article shall possess to be whiskey. The

Digitized by Google

rule by which this is to be determined is, "such as it [the State Board of Health] deems necessary." The result is, that when a sample of whiskey is offered for examination by an applicant for a fourth class license to sell the same to retail licensees, it is offered for examination as an article of food, and if it does not meet the requirements adopted by the State Board of Health for the examination of whiskey as an article of food, in that "any substance has been mixed . . . . with it so as to reduce or lower or injuriously affect its quality or strength; or any substance has been substituted wholly or in part for the article; or any valuable constituent of the article has been wholly or in part abstracted; or if it is mixed, colored . . . . or stained in a manner whereby damage or inferiority is concealed," (P. S. 5468) it is not free from adulteration prohibited in Chapter 133 as amended by No. 131, Acts of 1908.

I answer your inquiry in the negative. In arriving at this conclusion I have considered carefully the remarks and brief of Hon. William W. Armstrong in behalf of the Duffy Malt Whiskey Company presented at the hearing before me at my office in Montpelier, the 26th inst.

I am

Very truly yours,

JOHN G. SARGENT,

Attorney General.

Digitized by Google

G 14, 67-4
V2 b

UNIV. OF ...
DEC 13 1909

Bulletin No. 2, Volume X.

Issued Quarterly By

Vermont State Board of Health,

December 1, 1909.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt. under act of Congress of July 16, 1894.

CONTENTS.

Pure Food and Drugs, by George M. Kober, M. D., LL. D., Professor of Hygiene, School of Medicine, Georgetown University, Washington, D. C. 3
Vital Statistics, by Cressy L. Wilbur, M. D., Chief Statistician, Bureau of the Census, Washington 24
Notes on Vermont Waters, by C. P. Moat, Chemist 34
Specimens Examined at the Laboratory of Hygiene During Third Quarter, July, August and September, 1909 45
News Items 63

BRATTLEBORO, VT.

1909.

Digitized by Google

RULES OF HEALTH.

(From "Poor Richard's Almanack," by Benjamin Franklin).

Eat and drink such an exact quantity as the constitution of thy body allows of, in reference to the services of the mind.

They that study much ought not to eat as much as they that work hard, their digestion being not so good.

The exact quantity and quality being found out is to be kept to constantly.

Excess in all other things whatever, as well as in meat and drink, is also to be avoided.

Youth, age and sick require a different quantity.

And so those of contrary complexions; for that which is too much for a phlegmatic man, is not sufficient for a choleric.

The measure of food ought to be (as much as possibly may be) exactly proportionable to the quality and condition of the stomach, because the stomach digests it.

That quantity that is sufficient, the stomach can perfectly concoct and digest, and it sufficeth the due nourishment of the body.

A greater quantity of some things may be eaten than of others, some being of lighter digestion than others.

The difficulty lies in finding out an exact measure; but eat for necessity, not pleasure: for lust knows not where necessity ends.

Wouldst thou enjoy a long life, a healthy body, and a vigorous mind, and be acquainted also with the wonderful works of God, labor in the first place to bring thy appetite to reason.

Digitized by Google

PURE FOOD AND DRUGS.

By George M. Kober, M. D., LL. D., Professor of Hygiene, School of Medicine, Georgetown University, Washington, D. C.

The chief objects of food, according to Professor Atwater, are to form the material of the body and repair its wastes, and to yield heat to keep the body warm, and muscular and other power for the work it has to do.

The human body is made up of about 60 per cent of water, 19 per cent of protein compounds, 15 per cent of fats, and 6 per cent of mineral salts, all of which are sooner or later consumed, involving certain expenditures, which must be covered if health and life are to be preserved. It seems quite unnecessary to insist that, apart from "accessory foods" which stimulate digestion and assimilation, only such foodstuffs should be introduced as actually enter into the composition of the body or serve a physiological purpose.

When we consider the complex and delicate structures of the human organism, especially of the individual body cell, we will be in a position to appreciate that the food should be pure and free from injurious ingredients. When it complies with these prerequisites, it cannot fail to influence the growth and development of the child, but also the health, power of endurance and resistance in the adult. Indeed pure and wholesome food often plays the most important if not decisive rôle in the treatment of the sick.

These general facts and ethical considerations have been the keynote in the campaign for pure food. It is very evident that this crusade would never have been necessary if it had not been for the greed and ignorance of unscrupulous dealers who have profited by the fraudulent manufacture and sale of adulterated and misbranded food. Nor would the question of chemical food preservatives have ever come into prominence if certain manufacturers and canners had not found it profitable to inflict upon the public by such methods inferior and deteriorated articles of food. The subject is by no means of recent origin since some of the sanitary rules of the Middle Ages relate to adulterated food. Indeed it may be said that the world in this respect is really getting better.

Pure Food Legislation.

The first movement towards securing comprehensive legislation against the adulteration of foods in this country was made in 1879. This is all the more surprising because Dr. Mann, in his "Medical Sketches of 1812," remarks that "the bread on the Niagara was made of damaged flour, such as was either not nutritious or absolutely deleterious. It was believed also that the flour contained in some instances an earthy substance, and that this adulterating substance was plaster-of-paris." Again, during the Civil War, as early as the winter of 1861-62, an extract of coffee furnished the

Digitized by Google

troops in the vicinity of Alexandria produced nausea and vomiting, and subsequently a government contractor, for having practiced food adulteration, was sentenced to a protracted imprisonment.

Instances, therefore, were not wanting pointing to the necessity of such laws; nevertheless, it was not until 1881 that three states, New Jersey, New York and Michigan, enacted legislation to prevent the adulteration of food and drugs.

According to W. D. Bigelow, Massachusetts in 1883 enacted the first practicable food inspection law in the United States. In 1906 twenty-five states had enacted and enforced food laws; in three additional states laws relating to the purity of dairy products were enforced and in several others a beginning had been made. The necessity for a Federal law became very apparent from the results of the numerous analyses of state chemists and because there was practically no law regulating the interstate traffic of adulterated foods. The extent of fraudulent practices can be judged by the following facts extracted from Bulletin No. 100 of the Bureau of Chemistry, prepared by W. D. Bigelow and B. J. Howard, on "Some Forms of Food Adulterations and Simple Methods for their Detection" issued in March, 1906.

Of 1243 samples of cream of tartar analyzed, 105 samples were adulterated with either alum, calcium sulphate, acid calcium phosphate, starch, terra alba, or sulphate of lime.

Of 212 non-alcoholic beverages (carbonated products), 116 were adulterated with artificial flavors or colors.

Of 530 syrups and fruit juices analyzed, 205 were artificial or contained preservatives.

Of 798 canned vegetables (asparagus, beans, corn, mushrooms, peas, and tomatoes) analyzed, 414 contained chemical preservatives, copper, saccharine, etc.

Of 178 cereal products examined, 58 contained artificial coloring matter, coal tar dyes, turmeric and foreign colors.

Of 940 samples of cocoa and chocolate analyzed, 258 contained foreign starches.

Of 641 samples of ground coffee examined, 116 contained chicory, ground peas and wheat flour.

Of 793 condimental sauces (catsups) examined, 538 contained chemical preservatives and artificial coloring, and of 47 samples of pickles analyzed 26 contained preservatives, glucose, or copper salts.

Of 5097 samples of butter examined, 2361 were adulterated with oleomargarine, "process or renovated butter," borax, water and foreign fats.

Of 352 samples of cheese examined, 83 were either deficient in natural fat (due to the use of skimmed milk) or were adulterated with cotton seed oil, or contained preservatives.

Of 122 samples of cream, 36 contained either formaldehyde, borax, alum, boric acid, or were adulterated with gelatine or annatto.

Digitized by Google

In 31.7 per cent of the 2847 samples of milk examined, there was evidence of the addition of water or removal of cream, and in 7184 other samples the milk was adulterated with either water, coloring matter or preservatives.

Of 734 samples of oleomargarine examined, 656 contained either preservatives or artificial coloring matter.

Of 1978 samples of lard analyzed, 574 contained either cotton seed oil, beef stearin or tallow.

Olive oil was frequently adulterated with all the way from 9 to 30 per cent of cotton seed oil.

Of 492 samples of lemon extract, 328 contained either foreign color or were deficient in lemon oil.

Of 236 samples of vanilla extract, 169 were adulterated with coumarin and vanillin, tonka bean, and foreign color.

Of 513 samples of jam, 253 contained glucose, preservatives, artificial coloring matter and flavor, apple pulp, exhausted pulp and other cannery residue, possibly, also clover seeds, summer squash and boiled white turnips.

In 642 out of 1216 samples of jellies and jams similar adulterations were revealed.

Analysis of cured and potted meats revealed the frequent presence of borax, borates, sulphites, and 125 out of 178 samples of sausage showed the presence of chemical preservatives and an excess of starch.

In 97 of 1018 samples of allspice, there is evidence of adulteration with ground ship bread, nut shells, clove stems, corn meal, woody matter, probably cedar sawdust.

In 175 of 1522 samples of cinnamon and cassia, in addition to the adulterants already named, we find evidence of the presence of charcoal, ginger, turmeric, sand, gypsum, cotton seed meal, wheat middlings.

In 212 of 1116 samples of cloves such adulterants as cocoanut shells, wheat or starchy matter, clove stems, redwood, were found; and in 152 out of 1834 samples of ginger, rice middlings, corn meal, mustard hulls, cayenne, sawdust, buckwheat, gypsum and dirt were demonstrated.

In 937 out of 2456 samples of mustard, adulterants such as wheat, rice and common flour, oil cake, seeds of radish, rape, cayenne, ginger, lime or plaster, clay, turmeric were demonstrated, while in other samples the oil of mustard had been removed.

In 664 samples of 3689 specimens of pepper examined, the presence of starches, cocoanut shells, ginger, pepper shells, cayenne, olive stones, and sawdust, sand in excess, plaster, buckwheat, ground ship bread, and charcoal was revealed.

In 62 of 120 samples of mace were contained corn starch, cereals, turmeric and wild mace.

In 555 of 1980 samples of confectionery were found glucose, starch and gum, organic and mineral colors, copper, gelatine, artificial flavors.

In 310 out of 1335 specimens of honey were contained glucose, cane sugar, etc.

Digitized by Google

In 497 out of 2832 maple products examined, was shown the presence of cane sugar, molasses sugar, glucose; Harrington states that a large part of the maple syrup in the market is wholly artificial, being made of ordinary sugar or glucose, appropriately colored and correctly flavored by means of extract of hickory bark.

Fifty-eight of 103 samples of table syrups were adulterated with glucose, cane sugar and molasses.

In 2438 out of 5532 specimens of cider vinegar were adulterations of spirit vinegar, water and the coloring of inferior grades.

In addition to exposing the many fraudulent practices which primarily affect the pocket-book of the consumer, the Bureau of Chemistry had also seriously studied the question of chemical preservatives in foodstuffs. Among them are salicylic, benzoic and boric acids and their sodium salts (sodium salicylate, sodium benzoate and borax), formaldehyde, ammonium fluoride, sulphurous acid, and sulphites. The investigations of the Bureau in which twelve men were used as subjects demonstrated that these preservatives are injurious to health.

As a result of public opinion and in spite of strenuous opposition of unscrupulous manufacturers the Federal Pure Food and Drug Law was enacted June 30, 1906. The State Board of Health of Vermont is to be congratulated upon securing a pure food law before the enactment of the Federal Law. The Act clearly defines what constitutes adulteration and misbranding and includes the various well-known provisions based on sound principles of ethics and justice which cannot fail to secure pure and wholesome food.

The section referring to the addition of coloring matter, or poisonous or other deleterious ingredients which may render such articles injurious to health, has given rise to considerable controversy among so-called pure food experts. The advocates of chemical preservatives claim that the action of the latter is similar to that of salt, vinegar and wood smoke and surely not open to greater objection. The conclusion of the Bureau of Chemistry, however, based upon actual feeding experiments, indicates that these agents, when continuously administered in small doses for a long period or when given in large quantities for a short period, create disturbances of appetite, of digestion and of health.

In reference to the use of artificial coloring of food products, Professor Wiley holds and we believe correctly, that it can scarcely be defended upon esthetic grounds, that imitation of the natural colors becomes a simple deception, and, in the case of copper sulphate, may work injury to health and digestion, and finally that there is no necessity for the use of chemic preservatives or of artifical colors in food products.

The advocates of chemical preservatives stoutly remonstrated against the findings and conclusions of Professor Wiley relating to benzoate of soda, and the subject was referred to a Referee Board of consulting scientific experts (composed of Dr. Ira Remsen, Dr. R. H. Chittenden, John H. Long,

Digitized by Google

A. E. Taylor and Dr. C. A. Herter. This Board reports as a result of three extensive and exhaustive investigations, that benzoate of soda mixed with food is not deleterious or poisonous and is not injurious to health.

The Board of Food and Drug Inspection decided therefore, March 3, 1909, that no objection will be raised under the Food and Drug Act to the use of benzoate of soda in food, provided that each container or package of such food is plainly labeled to show the presence and amount of benzoate of soda.

The main conclusions reached by the Referee Board are as follows:

"First. Sodium benzoate in small doses (under 0.5 gram per day), mixed with the food, is without deleterious or poisonous action and is not injurious to health.

"Second. Sodium benzoate in large doses (up to 4 grams per day) mixed with the food has not been found to exert any deleterious effect on the general health, nor to act as a poison in the general acceptation of the term. In some directions there were slight modifications in certain physiological processes, the exact significance of which modifications is not known.

"Third. The admixture of sodium benzoate with food in small or large doses has not been found to injuriously affect or impair the quality or nutritive value of such food."

Without wishing to criticise the findings of this Board it seems to us that the last sentence of the second conclusion is not in accord with the third conclusion.

In this connection it is interesting to note that Prof. S. Solis Cohen, long before the findings of the Referee Board were known, wrote to the Journal of the American Medical Association, January 9, 1909, as follows:

"I have not the slightest doubt that sodium benzoate (and especially the commercial or synthetic sodium benzoate), taken in foods more or less continuously, will derange digestion and set up irritative and degenerative changes in the gastro enteric mucosa. Similarly, I have no doubt that copper salts will cause chronic nephritis and it is possible that pathologic changes in the blood and in the nerves may also be originated in this manner."

While it is possible for Professor Wiley to have overemphasized the toxicity of some of the chemical preservatives, no one can deny that if he erred in his conclusions, he did so in the interest of public health, instead of protecting the pocket-book of dishonest manufacturers, and hence the American people and all honest dealers are with him.

In a resolution adopted by the American Association for the promotion of purity in food products (see Journal of the American Medical Association, February 20, 1909), the following statements occur:

"As practical manufacturers we know that artificial preservatives of any kind are unnecessary to the successful commercial preparation of good, sound, raw materials under proper sanitary conditions.

"The use of artificial preservatives makes possible and invites the employment of inferior and waste materials, often unfit for human consumption, and careless methods and insanitary conditions in food preparations."

Digitized by Google

We quite indorse the editorial opinion of the Journal of the American Medical Association when it declares: "As these progressive manufacturers are carrying on a forceful and educative campaign, doubtless it will not be long before the public is fully awake to what the legend 'contains one-tenth per cent of benzoate of soda' means."

The Journal, February 13, 1909, also quotes the opinion of Federal Judge Anderson, in a suit brought by some manufacturer to enjoin the State Board of Health of Indiana from enforcing that portion of the pure food law relating to the use of this chemical. "I am impressed with the proposition that this stuff, benzoate of soda, is put in there for reasons that make its prohibition reasonable and proper—to cover up careless methods of manufacture. Dirt and insanitary conditions can be concealed by putting this stuff in. It is not necessary to put it in if the materials are properly handled. If its use conceals the fact that proper methods have not been used, a rule of the State Board of Health prohibiting its use is reasonable."

ADMINISTRATION OF THE FOOD LAW.

In Professor Wiley's report for the year ending June 30, 1908, we read: "One of the most gratifying results obtained during the year has been the abandonment of the position of hostility which many of the manufacturers up to that time held, and an assumption of hearty coöperation, not only with the inspection work of the Department, but also with the broadest views respecting the wholesomeness of substances added to foods. A large number of prominent manufacturers during the year entirely abandoned the use of any kind of preservatives and openly announced their adhesion to the doctrine that drugs should not be placed in foods.

"The Department during the year collected approximately 13,400 samples of food and drugs, consisting chiefly of samples of extracts, spices, olive and salad oil, milk, liquors, wines, whiskies, molasses, vinegar, rye, diabetic and gluten flours, maple and cane syrups, coffee, cheese, honey, breakfast foods, misbranded morphine and cocaine preparations and drugs labeled as cures. . . . . Of the total number of samples analyzed and found to be adulterated, 814 were collected under such conditions that interstate delivery could be shown and these cases were accordingly certified to the Board of Food and Drug Inspection for their recommendation."

The report presents most interesting details of the work performed in different laboratories and a record of seizures for the fiscal year ending June 30, 1908.

That the Pure Food Law is on the whole working well, that the inspectors are as a rule competent and honest men, and that we need no longer consume adulterated foods unless we are willing or ignorant is the opinion of a writer in *The Druggist's Circular*, New York, April, 1909, who says: "I know of one particular instance, which occurred shortly after the law went into effect, in which the management of a certain plant attempted to

Digitized by Google

put through a batch of several hundred pounds of lard which did not conform to the requirements of the law, but the inspector on the job was a butcher and knew the lard was not right. It was not passed, but went into the by-product. I know it to be true that much worse lard than this condemned lot had been regularly put out by this same concern before the butcher inspector was put into the plant by the United States Government.

"In another factory, prior to 1906, black pepper was made of ground olive pits, corn meal, and paradise seed. . . . . The two-ounce packages of this compound would cost the jobber about .8 of a cent and the consumer five cents, a profit of over 400 per cent to be divided between the jobber and the retailer.

"Good black pepper retails at from 30 to 40 cents per pound, and fancy grades much higher, but a two-ounce carton may be had for five cents at present—and it is all pepper if the label says so. It is easy to see from this why the man who is long on paradise seed should think the Pure Food Law a bad thing."

This same writer goes into other details in reference to adulterated or misbranded foodstuffs which were formerly the order of the day. Now one may still have these, but only if he asks for them or is too careless to observe the label, oral misrepresentation not being punishable under the Federal law.

It would lead me beyond the scope of this paper to present in detail the influence of pure food on the health of communities, but it will be well to consider at least

MILK IN RELATION TO PUBLIC HEALTH.

In view of the importance of milk as an article of diet for all classes, but especially infants, invalids and the sick and convalescent, it is perfectly natural that much attention should have been given to the study of this foodstuff, and that of late years the sanitarian and bacteriologist should have found it a profitable field for research.

Few countries until recently have deemed it necessary to do more than prevent adulteration of the milk, and some of the legislators appear to think that as long as the milk has not been skimmed or watered, and contains the standard of total solids and fats, we need not worry about the germs we eat or drink. This may be a pleasing reflection to persons who do not know that such hydra-headed diseases as scarlet fever, diphtheria, and cholera infantum have been disseminated in the milk supply; that typhoid fever epidemics have been thus caused, and that milk may be the vehicle of the germs of tuberculosis and other infectious diseases and morbific agents.

Time will not permit me to do more than to briefly point out some of the circumstances under which milk may be the cause of disease.

1. Sour milk, or milk which is on the point of turning, is very liable in infants, children, or persons with feeble digestion to produce gastric and intestinal catarrhs of an acute or chronic character. In the more acute

Digitized by Google

cases, in bottle fed children, we have the phenomenon of cholera infantum. The causes of untimely acidity of the milk are improper feeding of the animals, dirty milk pans and rooms, unclean udders and teats, and a high temperature.

Every consumer of milk has doubtless observed the presence of more or less foreign matter found at the bottom of the vessel or bottle in which it is kept; indeed, it is a matter of such common occurrence that it hardly excites our attention. If these sediments are subjected to microscopical examination we will find that they are composed of epithelial debris, hairs of the cow, organic and inorganic dust particles, bacteria, fungi, and spores of every description, and last, but not least, excrementitious matter from the cow, which, adhering to the udder or other parts of the animal, gained access to the bucket in the act of milking. Unfortunately, fully 90 per cent of the bacteria found in such specimens are fecal bacilli. Milk when it leaves the udder of a clean cow contains very few germs; the majority gain access during unclean handling, especially when the milking is done in a dirty or dusty stable. The germs multiply with astonishing rapidity whenever the milk is kept at a temperature above 50 degrees F. Petruschky has shown that at the room temperature a streptococcal content of 300 per ccm. may increase in twenty-four hours to one of 10,000,000, but the same milk kept at 50 degrees F. yielded but 30,000 or but three one-thousandths as many. These and other investigations indicate the extent of germ development which must go on when milk is transported without refrigeration over long distances with the thermometer ranging between 80 and 90 degrees, and the absolute necessity of keeping it at a temperature of 50 degrees F. The number of bacteria in the market milk of Washington City, according to Dr. Rosenau, averaged 22,134,000 per ccm. in the summer of 1906, and 11,270,000 in the summer of 1907. The legal standard of permissible number of bacteria in Boston is 500,000, and at Rochester 100,000, and we can all agree with Prof. William H. Park: "That any intelligent farmer can use sufficient cleanliness and apply sufficient cold with almost no increase in expense to supply milk twenty-four to thirty-six hours old, which will not contain in the maximum over 50 to 100,000 bacteria per ccm. and that no milk containing more bacteria than this should be used."

Without doubt dirty and sour milk or milk which is on the point of turning is the chief cause of cholera infantum and diarrhœal diseases in bottle fed children. One of the reasons why there are less deaths from infantile diarrhœa in rural districts than in towns and cities in proportion to the population is that the milk used is comparatively fresh and contains fewer germs and less toxins. Dr. W. J. Tyson tells us that three fourths of the 150,000 infantile deaths in Great Britain occurred among bottle fed children.

Indeed we have evidence that of the 54,047 infantile deaths which have been investigated at home and abroad with reference to feeding, 86.6 per cent had been artificially fed, all of which points to the fact that the quality of the food, chiefly cows' milk, in hand fed children, plays the most im-

Digitized by Google

portant rôle. This assumption finds, moreover, support by the fact that the infantile death rate and diarrhœal diseases in children under five years of age have materially decreased in a number of American cities since the enactment of pure milk laws, notably in Buffalo, Rochester, Chicago, New York and Washington. According to Dr. Woodward's report for 1905, the death rate from diarrhœa and inflammation of the bowels among children under two years of age during the five-year period ending 1894, was 175 per 100,000. During the next ten years it dropped to 109, and in 1906 it was only 97. Dr. Woodward says: "The only explanation for the fall in the death rate from infantile diarrhœa that I have been able to discover is the enactment on March 2, 1895, of the law regulating the sale of milk in the District of Columbia, and the establishment of dairy and dairy farm inspection under the provision of that law."

2. Milk may be rendered unfit for use and cause sickness in children by reason of improper food of the animal, or while the animal is being treated with strong remedial agents, which may be excreted in the milk. The symptoms of poisoning from arsenic, copper, iodine, lead, mercury, tartar emetic, atropine, colchicum, croton oil, strychnine, veratrum viridis, etc., have been thus observed. The evidence on this subject has been presented in detail in the writer's monograph published as Senate Document 441 in 1902.

3. Milk itself may be morbific as the product of a diseased animal. Dr. Busey and myself have elsewhere pointed out that inflammatory conditions of the udder and teats, especially the condition known as garget, owing to the presence of large numbers of staphylococci and streptococci, are doubtless responsible for a large number of cases of pseudo-diphtheria and other septic infections. The milk of animals suffering from acute specific enteritis, puerperal and other septic fevers, foot and mouth diseases, cowpox, anthrax, pleuro-pneumonia, rabies, and tetanus has also been known to produce sickness in the consumer.

4. It has been shown by numerous investigations, both at home and abroad, that the ordinary market milk contains tubercle bacilli. "Dr. John F. Anderson (see Bulletin 41 of the Public Health and Marine Hospital Service) examined 223 samples of the market milk in the city of Washington, and found fifteen or 6.72 per cent to contain virulent tubercle bacilli." According to an editorial in the Journal of the American Medical Association, May 22, 1909, bovine tubercle bacilli have been found in about twenty per cent of the cases investigated. In this connection the question naturally arises, What danger, if any, is there from the transmission of bovine tuberculosis to man? Professor Koch's views on this subject may be summarized as follows: (1) The tubercle bacilli of bovine tuberculosis are different from those of human tuberculosis. (2) Human beings may be infected by bovine tubercle bacilli but serious diseases from this cause occur very rarely. (3) Preventive measures against tuberculosis should therefore be directed primarily against the propagation of human tubercle bacilli.

His opponents, on the other hand, believe that the danger from the trans-

Digitized by Google

mission of bovine tuberculosis is considerable, that the meat, milk, cream, butter, ice cream may contain tubercle bacilli—if the product is derived from an infected cow—and that infection by the intestinal route may not only produce tuberculosis of the bowels, peritoneum and lymphatic glands, but also of the lungs.

There is more or less experimental and clinical evidence to indicate the possibility of the transmission of bovine tuberculosis to man. (Callmette, Guerin, De Schweinitz, Schroeder, Mohler, Ravenel, Eber, and a host of others believe that the bovine variety does cause tuberculous lesions in man.) The writer in 1903 presented to the Association of American Physicians a tabulation of eighty-six cases of milk-borne tuberculosis in children, three accidental inoculations in man by the topical application of cream and milk, and twelve tuberculous wound infections in veterinarians and butchers.

Dr. William H. Park, in a paper read before the same Association in May, 1909, reported that of seventeen fatal cases of generalized tuberculosis in infants, five were found to be due to bacilli of the bovine type; two cases of abdominal tuberculosis were both due to the bovine bacillus. Of twenty-nine cases of glandular tuberculosis, nine disclosed the bovine type. In the five cases of bone and joint tuberculosis and four cases of pulmonary tuberculosis among babies, the bacilli were all of the human type.

Dr. Salmon has shown from the vital statistics of Massachusetts and Michigan that while there has been a marked reduction in the mortality of tuberculosis at all other ages, there has been a tremendous increase in the class under five years of age.

5. Milk may acquire infective properties after it leaves the udder of the animal. Numerous instances have been observed in which outbreaks of typhoid fever, scarlet fever, and diphtheria, by their sudden and explosive character, affecting families living in streets and localities supplied by the same milkman, naturally pointed to the milk supply as a common cause. Mr. E. Hart, the editor of the British Medical Journal, was enabled to present to the International Medical Congress, held in London in 1881, the history of fifty outbreaks of typhoid fever, fifteen of scarlet fever, and seven of diphtheria, all traceable to the milk supply. In a similar communication made before the International Medical Congress at Paris, in 1900, the writer presented his conclusions based upon the tabulated histories of 330 outbreaks of infectious diseases spread through the milk supply; these outbreaks consisted of 195 epidemics of typhoid fever, ninety-nine epidemics of scarlet fever, and thirty-six epidemics of diphtheria. Dr. Trask, in Bulletin 41, presents the details of 170 additional epidemics since the appearance of my monograph. Raudnitz estimates that one fourth of the typhoid epidemics in Austria are milk-borne, and so were 17 per cent of the 638 epidemics analyzed by McCrae.

It has been demonstrated by numerous bacteriologists that disease germs may not only survive, but in many instances actually proliferate, in the milk, and it is not a difficult matter to point out the many ways by which

Digitized by Google

these germs gain access, especially when some of the employees are also engaged in nursing the sick, or are suffering themselves from some mild infection while continuing their duties, or are convalescent from the disease and have become chronic bacillus carriers.

It is quite conceivable how animals wading in filth and sewage-polluted water may infect the udder with the germs of typhoid fever and through it the milk. We can also appreciate how infected water may convey the germs by washing the utensils or by deliberate adulterations. Infection may also take place through the agency of scrubbing brushes, dish-cloths, exposure to infected air, and the agency of flies.

Of the 195 epidemics of typhoid fever tabulated by me there is evidence in 148 of the disease having prevailed at the farm or dairy. In sixty-seven instances the infection probably reached the milk by percolation of the germs into the well water with which the utensils were washed; in sixteen of these the intentional dilution with water is a matter of evidence. (In three instances the bacillus coli communis and the typhoid germs were demonstrated in the suspected water.) In seven instances infection is attributed to the cows wading in sewage-polluted water and pastures; in twenty-four instances the dairy employees also acted as nurses; in ten instances the patients while suffering from a mild attack, or during the onset of the disease, continued their work, and those who are familiar with the personal habits of the average dairy hands will have no difficulty in surmising the manner of direct digital infection. In one instance the milk tins were washed with the same dish-cloth used among fever patients. In two instances dairy employees were connected with the night soil service, and in another instance the milk had been kept in a closet in the sick room.

Of the ninety-nine epidemics of scarlet fever, the disease prevailed in sixty-eight instances either at the dairy or milk farm. In six instances persons connected with the dairy either lodged in or had visited infected houses. In two instances the infection was conveyed by means of infected bottles or milk cans left in scarlet fever houses. In seventeen instances the infection was conveyed by persons connected with the milk business while suffering or recovering from the disease, and in at least ten instances by persons who acted as nurses while handling the milk. In three instances the milk had been stored in or close by the sick room. In one instance the cans had been wiped with an infected cloth. In nineteen instances the infection was attributed to disease of the milch cows, such as puerperal fever and inflammation of the udder and teats; but these outbreaks were probably not genuine scarlet fever, but a so-called streptococcus or staphylococcus infection, the symptoms of which closely resemble those of scarlet fever.

Of the thirty-eight outbreaks of diphtheria tabulated, there is evidence that the disease prevailed at the dairy or farm in thirteen instances. In three instances the employees continued to handle the milk while suffering themselves from the disease. In twelve instances the disease is attributed directly to the cows having inflammatory conditions of the teats and udders.

Digitized by Google

These instances, however, may be regarded as typical examples of streptococcus and staphylococcus infection, giving rise to a form of follicular tonsilitis or pseudo-diphtheria, often difficult to distinguish clinically from true diphtheria or scarlet fever.

It is interesting to note that of the 330 epidemics analyzed by me, 243 have been recorded by English authors, fifty-two by American, fourteen by German, eleven by Scandinavian, and five each by French and Australian writers. This is probably due to the fact that English and Americans usually consume raw milk, while on the Continent milk is rarely used without being boiled.

A review of the evidence in milk contamination both in this country and Europe shows that the laws which have been enacted to protect the public deal largely with the milk sophistication, and even in this respect have fallen short of their aim.

Pure natural milk can only be secured at dairies with sanitary buildings, a pure water supply, healthy, well-fed and well-cared-for cows, a well-equipped and well-kept milk room, provisions for thorough cleanliness, intelligent and conscientious people in charge and clean methods throughout. Those who are familiar with the surroundings of our milk farms and the habits of the average dairy employee need no argument for sanitary reforms, and the principles which ought to be carried out should be embodied in effective laws and accepted and enforced in a practical sense. Honorable men will not object to regulations calculated to promote the purity of their product and the health of their consumers, and as many of the most serious faults in the milk business are the result of ignorance rather than of intentional neglect, the difficulties will be materially lessened by proper education and trade competition.

Until the needful reforms in dairy methods are accomplished we recommend the following as immediate safeguards:

(1) Do not patronize a milk dealer at any price whose milk after standing for two hours reveals a visible sediment at the bottom of the bottle. It is evidence of dirty habits, extremely suggestive of danger and entirely preventable by clean, decent methods without greatly increasing the cost.

(2) Subject all your milk to home pasteurization and after cooling, keep it at a temperature below 50 degrees F. This will not make bad milk good, but it will at least destroy germ life and reduce the chances of milk-borne diseases to a minimum. Dr. M. J. Rosenau has made a thorough study of the advantages and disadvantages of pasteurization and declares: "That there is no evidence to show that low temperature pasteurization ever in itself induces scurvy." The present writer has urged for years pasteurization at a temperature of 150 degrees F. for twenty minutes, and pointed out that the dangers of pasteurization have been exaggerated and the question of incomplete absorption of the salts as a cause of scurvy and rickets has been overlooked. These diseases it should be remembered develop usually in children after prolonged diarrhœal diseases. The child is placed on pas-

Digitized by Google

teurized milk for the relief of diarrhœa and if scurvy or rickets develop, the blame falls upon pasteurized milk, when it properly attaches to the incomplete absorption of the salts incident to diarrhœal diseases. It is gratifying to record that recent investigations by Dr. Kastle of the Public Health Service show that low pasteurization does not impair the ferments or enzymes contained in fresh milk, does not alter its chemical composition, does not lessen its food value, either as to nutrition or digestibility, and does not alter its taste or physical qualities. In the light of our knowledge of milk-borne diseases and especially in view of the existence of typhoid bacillus carriers, we know of no means by which the transmission of these diseases can be prevented except by general pasteurization. As a direct means of reducing the slaughter of innocent babes, it has been shown that the percentage of deaths among the infants in the care of the city of New York at Randall's Island was reduced by the installation of a pasteurizing plant from 41.81 for the period ending 1897, to 21.75 for the seven-year period ending 1904.

PURE DRUG LEGISLATION.

According to Dr. L. F. Kebler, Chief of the Division of Drugs, U. S. Department of Agriculture, cited by Professor Wiley, interest in pure drugs was manifested in this country over fifty years ago and resulted in the enactment of a federal law in 1848, governing the importation of adulterated and spurious medicines, drugs and chemicals.

"The testimony which was taken preliminary to the passage of this act is extremely interesting. Previously to this time there had been established at the port of New York an examiner of drugs, who at the time mentioned was Dr. M. J. Bailey. In his testimony he stated that he had no authority to examine into the purity of any article further than to enable him to judge of the value as stated in the invoice. He had, however, made it his business to study the nature of the drugs imported and by so doing was able to give much valuable information on the fraudulent transactions connected with these products.

He not infrequently found opium deprived of many of its active principles and adulterated with licorice paste. Often this so-called opium was found infested with worms. In response to numerous questions asked by the Congressional Committee, Dr. Bailey stated that at least one half of the drugs imported through the customhouse in New York were adulterated, or had deteriorated in value so that they were rendered not only worthless for medicinal use, but often dangerous."

In latter years the necessity for a law regulating the manufacture and sale of domestic drugs became more and more apparent and the Act of June 30, 1906, specifies that an article shall be deemed adulterated:

"First. If when a drug is sold under or by a name recognized in the United States Pharmacopœia or National Formulary, it differs from the standard of strength, quality, or purity, as determined by the test laid down

Digitized by Google

in the U. S. Pharmacopœia or National Formulary official at the time of investigation. Provided, that no drug defined in the U. S. Pharmacopœia or National Formulary shall be deemed to be adulterated under this provision if the standard of strength, quality or purity, be plainly stated on the bottle, box, or other container thereof, although the standard may differ from that determined by the test laid down in the U. S. Pharmacopœia or National Formulary.

"Second. If its strength or purity falls below the professed strength or quality under which it is sold."

The act defines the term misbranded in its relation to drugs as follows:

"The term misbranded as used herein, shall apply to all drugs, or articles of food, or articles which enter into the composition of food, the package or label of which shall bear any statement, design, or device regarding such article, or the ingredients or substances contained therein which shall be false or misleading in any particular, and to any food or drug product which is falsely branded as to the state, territory or country in which it is manufactured or produced."

In case of drugs:

"First. If it be an imitation of or offered for sale under the name of another article.

"Second. If the contents of the package as originally put up shall have been removed, in whole or part, and other contents shall have been placed in such package, or if the package fail to bear a statement on the label of the quantity or proportion of any alcohol, morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate or acetanilid, or any derivative or preparation of any such substances contained therein."

Professor Wiley, in an address delivered in 1907, estimates that there are "at least 50,000 different kinds of drug products, proprietary and otherwise, at present placed on the market in the United States. Of these only about 1500 are described in the United States Pharmacopœia and National Formulary, and the great bulk of products are sold therefore under standards fixed upon the labels themselves. It has been the practice in the past to place drugs upon the market of an uncertain, and in many cases, unknown composition; sometimes too they have been of a questionable composition. We need only look over the literature of the day to see how extravagant the language has been in representing the merits of these drugs." These products now come under the misbranding clause of the act, which has already been instrumental in securing long needed reforms.

Before referring to the great nostrum evil it will be well to give briefly the general results achieved by the enforcement of the pure drug act. In Professor Wiley's annual report for the year ending June 30, 1908, we are told, that "the investigations of imported raw materials from which drugs are manufactured show that many are unsuitable for the purpose, being adulterated with dirt, sand, sticks and fragments of all kinds, sometimes to the

Digitized by Google

extent of more than 40 per cent. Special investigations have been made of a chemical and microscopical character for the identification of crude drugs of a vegetable origin and widespread adulterations have been revealed by these studies. A drug recognized as standard by the Pharmacopœia may be replaced by some other member of the family to which it belongs, resembling it in general character but differing from it widely in therapeutic value. This substitution robs the drug of its efficacy and negates the work of the pharmacist and physician, preventing the patient from receiving the full benefit of the prescription."

The Division of Drugs examined during the year ending June 30, 1908, 1787 samples. Of this number 482 were chemical reagents; 568 were imported products; 363, domestic samples; thirty-five, samples of hops tested for the presence of arsenic; eighty, samples of medicated soft drinks; thirty-two, samples of prescription schemes. Of the 363 official preparations analyzed, forty were found to be either adulterated or misbranded within the meaning of the pure food and drug act. Speaking on the subject of standards, Professor Wiley feels that at the present time, the great majority of the manufacturers are endeavoring to supply the trade with the best goods that science and care can produce.

THE NOSTRUM EVIL IN GENERAL.

The sociological study of the President's Homes Commission of 1217 families in the city of Washington, shows that they expended $2,032.39 per annum for patent or proprietary medicines. The annual expenditure in the United States has been estimated to be not less than $62,000,000. The far-reaching consequences of this traffic, which impoverishes the health and pocket-book of our least resourceful people, has been made in a fearless and most commendable manner the subject of popular education, notably by the Ladies' Home Journal, Collier's Weekly, the Journal of the American Medical Association, Pharmaceutical Journals, Professor Wiley and his associate, Dr. L. F. Kebler of the Bureau of Chemistry, U. S. Department of Agriculture.

The writer, in his oration on State Medicine delivered before the American Medical Association, June, 1901, and more recently in his report as chairman of the Committee on Social Betterment of the President's Homes Commission, presented data to show that up to October 31, 1908, the U. S. Patent Office has issued 2140 patents and 8398 trade marks on drugs, chemicals and medical compounds.

By the term patent medicine, as properly employed, it must be understood that the composition is known and can be seen at the Patent Office. The proprietary medicine is a secret preparation protected by a trade mark and hence preferred by the owner, but both are vaguely termed by the public patent medicines.

The proprietary medicines are subject to the control of the state authorities and, if containing alcohol, are subject to internal revenue laws. But

Digitized by Google

up to the enactment of the pure food and drug law, June 30, 1906, nothing was done to control the sale of secret remedies and medicinal preparations containing habit-forming drugs, the composition of which needed not even to be disclosed at the Patent Office.

Fortunately Section 8 (Section 5473 of the Vermont Statutes) provides that an article shall be deemed misbranded "if the package fails to bear a statement on the label of the quantity or proportion of any alcohol, morphine, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate or acetanilid, or any derivative or preparation of any such substance contained therein."

In consequence of this very wise provision we are now enabled to estimate the enormity of the harm which must inevitably result from the promiscuous use of such preparations.

Dr. Kebler furnished me last year a list of about 365 headache remedies containing among other ingredients either acetanilid, antipyrin and phenacetin. The Department has carried on an exhaustive investigation into the poisonous properties of these drugs for the very laudable purpose of sounding a note of warning as to the injurious and even fatal effects which may follow their ill advised, prolonged or habitual use. Of the cases so far collected we find 1665 instances of poisoning with fifty-four fatal results, and 169 instances of habitual use. This valuable information has recently been published in Bulletin 126, Bureau of Chemistry, U. S. Department of Agriculture, July 3, 1909, which should be in the hands of every physician.

In my report of the President's Homes Commission will be found a list of 120 patent and proprietary compounds, the so-called "bracers," containing sufficient alcohol to be intoxicants, and in the same report we give a list of thirty-eight medicinal preparations which contain habit-forming drugs other than alcohol, such as opium, morphine, cocaine, chloral, cannabis indica, heroin—among them a number of "teething and soothing syrups."

We have also given a list of so-called antifat cures, like Obesity Food, Rengo Fruit, Kellogg's Obesity Food, "Arbolum Mixture," Marmola. Since the active principle of these remedies depends upon the presence of thyroid extract, which is characterized by Dr. Reid Hunt as the most powerful tissue destroying drug known, the effects upon the unfortunate victims of misplaced confidence can be readily surmised.

The report contains also a list of fifty-two alleged cures for drug and liquor habits. It was hoped that with the enactment of the pure food and drug law, which requires that the amount of the habit-forming drug in any medicine be stated on the label, such nefarious practices would cease. Imagine my surprise at the audacity of one firm, when shown by Dr. Kebler a preparation known as "Habitina," recommended as a cure for all drug addictions, etc., when the label disclosed the fact that one ounce of the solution contained twenty-four grains of morphine. Dr. Kebler has also furnished me with a list of fifty-one so-called female pills or regulators advertised in this country. While some of these may act as abortifacients, the

Digitized by Google

majority are frauds pure and simple, and the Division of Drugs is doing excellent work in assisting the Post Office Department in exposing these frauds as well as the ridiculous pretensions of designing quacks who advertise their skill and appliances in the cure of sexual diseases.

We have also before us a list of ten advertised diphtheria cures. In view of the fact that diphtheria antitoxin is the only reliable remedy in this disease, there can be no question that recourse to these nostrums is fraught with danger to the child. Space will not permit me to refer in detail to the remedies advertised for the prevention and cure of consumption, asthma, hay fever and catarrh collected by the Division of Drugs except to say that many of these preparations contain drugs which enslave, and like the innumerable rheumatism, kidney and bladder cures, skin cures, cancer and epilepsy cures, prescription schemes are further objectionable on account of the fraudulent methods used in their exploitation.

DANGER OF SOFT DRINKS CONTAINING HABIT-FORMING DRUGS.

In this connection attention is directed to the danger of soft drinks containing caffeine, extract of kola nut and extract of coca leaf, the active principles of the two latter being cocaine. According to Dr. Kebler there are now nearly one hundred different medicated soft drinks on the market. These beverages are extensively advertised, some in fact as headache remedies and nerve tonics, and are sold at nearly every soda water fountain, or as carbonated goods, in all parts of the country, without the slightest warning to the public of the harmful ingredients contained therein.

We restrict the use of coffee and tea in children and delicate and nervous individuals, and yet these same persons frequent the soda fountains, regale themselves with soft drinks, quite unconscious of their contents, experience the stimulating and refreshing effects and soon fall victims to the habit so that even coca cola fiends have come into prominence. It is well known that the opium habit may be acquired by the use of various domestic remedies, and so the cocaine habit may be developed by the use of these much lauded soft drinks.

LAWS REGULATING THE SALE OF DRUGS AND POISONS.

Forty-two states and territories have enacted laws to regulate the sale of poisons, but a careful study shows that they should be amended, and greater restriction placed on the sale of poisons generally. A recent investigation into the extent of the opium and drug habit in the District of Columbia developed some interesting facts, and led to the conclusion that one class of subjects have developed the opium habit by the use of the milder preparations of opium and some of the various proprietary or secret remedies commonly employed as domestic remedies, such as paregoric, McMunn's elixir, chlorodyne, blackdrop, soothing syrup, diarrhœa mixtures,

Digitized by Google

pain-killers, etc. Another class have evidently acquired the habit by the constant use of prescriptions containing opium or its preparations for the relief of pain, the individuals being at first quite unconscious of the enslaving nature of the drug. Still another class of persons belong to the moral degenerates of fast men and women who have acquired the habit by contact with opium habitues, including opium smokers, and through solicitation, invitation and persuasion have fallen victims to the vice. Since the opium habit is often established by the unauthorized and indiscriminate renewal of prescriptions containing opiates, the New York legislature very wisely enacted, in 1886, a law that no pharmacist shall refill more than once prescriptions containing opium or morphine, or preparations of either, in which the dose of opium shall exceed one-fourth grain, or morphine one-twentieth grain, except with the verbal or written order of a physician.

In our study of the prevalence of so-called vice diseases, we found that during the past nine years there were treated in the Washington hospitals at public expense not less than 9510 patients for alcoholism, 409 for delirium tremens, 256 for the opium habit and sixty-one for the cocaine habit. Seven persons died from the opium habit, thirty-six persons died from accidental or negligent opium poisoning and thirty-six committed suicide with opium or its preparations.

From a careful analysis of the evidence it is apparent that the sale of habit-forming drugs is generally carried on through the instrumentality of (1) unscrupulous local dealers, (2) depraved and unscrupulous local physicians and (3) through dealers, physicians, agents and peddlers located in other jurisdictions.

It is a significant fact that Mr. Vanzant, the special police officer charged with the execution of the pharmacy law in Washington, with the exception of the Chinese opium fiends has never encountered other foreigners who are addicted to the drug habit. This may be accounted for by the fact that nowhere is the habit of self medication with nostrums for each and every ailment so widespread as in this country. No wonder that insanity and diseases of the nervous system are on the increase, and that the physical, moral and mental wrecks of the alcohol and drug habit continue to swell the number of dependents in hospitals, insane asylums and other public institutions.

The writer has reached the conclusion that existing laws are insufficient to cope with the evil. Even the proposed law regulating the interstate traffic of habit-forming drugs, while a step in the right direction, will not prevent abuses so long as we have to deal with unscrupulous persons even in the ranks of the medical, dental and veterinary profession—and for whom adequate punishment should be provided whenever in the judgment of the court they have abused their professional rights and privileges in prescribing these drugs. As far as the suppression of quackery is concerned, nothing short of a total exclusion from the mails of letters, newspapers, circulars, pamphlets, or publications of any kind, containing any advertisement

Digitized by Google

of secret remedies for the cure and treatment of disease, will reach the evil.

In the meantime the President's Homes Commission recommended that the Postmaster General be requested to publish with the monthly supplements to the official Postal Guide a Bulletin setting forth the essential facts in connection with the fraud orders during the preceding month, such bulletins to be posted in post offices and to be distributed along the rural delivery routes. We also recommended that all information concerning the harmful ingredients in foods, medicines, soft and alcoholic drinks which may come to light during the execution of the pure food and drug law, be published by the Department of Agriculture in the same manner as Farmers' Bulletins are now being published. The public is entitled to be warned and for this purpose it is essential that the indisputable facts should enanate from some official source.

Dr. C. O. Probst, Columbus, Ohio.

I was greatly interested in Dr. Kober's valuable paper. I wish to say just a word regarding the subject of milk. I do not know what it retails for here in Vermont but in my locality it sells for six and seven cents a quart. I have been told by Professor Russell, of the Wisconsin University, who pays a great deal of attention to dairying, that it is absolutely impossible to produce pure milk for less than twelve cents a quart. Now we must convince the public that they must pay more for their milk in order to get pure milk.

An interesting question has come up, that is, whether the germ of typhoid fever in a running brook from which a cow drinks may get into the milk or not. Dr. Stokes of Baltimore did considerable work along this line. They decided (he had a collaborator) that this does not happen, but the germ can pass through the intestinal canal and appear in the excreta.

The germ of typhoid fever may be present in man for a very long time after convalescence. For instance, an epidemic was traced to a milk supply which received its pollution from a milk attendant who had had typhoid fever more than one year previous. If such a state really exists, and we have every reason to believe this to be true, we must look out not only for the present cases but for all who have ever had the disease.

I hope Dr. Kober will give us something more on this line.

Dr. Henry D. Holton, Brattleboro.

Dr. Kober spoke of the Vermont Pure Food Law which conforms to the United States Law. Our Pure Food Law was passed in 1904 and in 1906 amended so as to conform to the National Pure Food Law.

With regard to the milk question, I wish to say that three years ago we began an examination of the milk throughout the State and found, as perhaps some of you know, that two-thirds of the milk which was then being sold from the carts in the villages was filthy milk. We have had only

Digitized by Google

twelve or fourteen cases of watered milk in the state from that time to this and every defendant has come up and paid his fine without a protest. The only excuse offered has been that that milk had been purchased from a neighbor. I agreed that the neighbor should be prosecuted if he was the guilty one but as he did not offer the milk for sale on the street, we had nothing to do with him. The last examination, last January, showed that two thirds of the milk sold was clean and only one third was dirty milk. We have used the methods which the doctor spoke of. Something was said regarding the transmission of bovine tuberculosis to man. One way in which the milk becomes contaminated is through the feces of the cow. The tubercle bacilli pass through the intestinal canal of the cow and get into the milk if the cow is not kept perfectly clean. There is a case on record in Virginia where the milkman wished to be especially careful so he washed the udders of the cow after as well as before milking. The udders were not wiped off and some of the water used in bathing, dripped into the milk. This water was polluted with typhoid bacilli and an epidemic ensued.

Questions have been asked me regarding the number of bacteria which we allow in milk. In regard to this matter, I would say we have never refused or characterized milk as unwholesome on account of bacteria. We want you to carry home the gospel of cleanliness to your milkmen. Progress has been very marked in this state but we have yet much to do. I have found but very few milkmen who are not willing to do all required of them. They try to do what we ask them to do and for this we are very thankful.

E. A. Graves, Sunderland.

I would like to ask the question—is human and bovine tuberculosis considered one and the same?

Dr. George M. Kober.

The question was asked by Mr. Graves whether bovine and human tuberculosis are one and the same. We know there is a morphological difference in the bacilli, but the effects are practically the same. Tubercle bacilli coming from the cow are capable of producing tuberculosis not only of the intestinal tract but also of the peritoneum, lymphatic glands, joints, bones and lungs. In answer to Dr. Probst I have my doubts about the conveyance of typhoid fever by cattle drinking infected water. If cattle wade in streams near the outlet of sewers, their udders may become polluted and there is every reason to suppose the germs may cling to the teats and are milked into the milk pan. All these dangers can be reduced to a minimum by efficient disinfection. Fecal matter must contain the living germs and if the vitality has been destroyed by proper disinfectants, even boiling water for fifteen minutes, the typhoid germs would be destroyed and no danger would result. A milk-borne epidemic occurred not so very long ago in Washington, which was traced to the woman attendant in the dairy who had typhoid

Digitized by Google

fever eighteen years previous. Upon looking up the literature on the subject of chronic bacilli carriers, it has been found that from three to five per cent of all persons once having the disease, discharge virulent bacilli for a number of years thereafter in their excreta. It has been ascertained that the percentage of bacillus carriers is greater among females. The moment the fingers are soiled with fecal matter, those hands become a source of danger. The greatest good may be gained by taking special precautions in the instruction of the bacilli carriers. The old Mosaic law—Wash your hands after every unclean act—is applicable to these chronic bacilli carriers. When a bacilli carrier is found, he should be obliged to use a special water closet; he should be furnished with creosol soap and a towel and instructed to wash his hands after every unclean act and he should not be permitted to handle food which any one is to partake of, and in this way Germany hopes to stamp out this source of danger. Koch has shown that typhoid fever is spread in the rural districts by children attending school with ill defined symptoms. It is better to assume that these children are suffering with typhoid fever than not. The children may not be sick enough to be confined to bed, but it is believed that by contact and visits from other children the germs are carried from one child to another.

I want to compliment the state of Vermont and the officers for their very aggressive health campaign which has been waged. Vermont has been exceedingly progressive and you have been among the leaders of the New England states.

Dr. D. C. Noble.

We are truly fortunate in having a paper presented on this very important subject by one who has devoted so much time and study to it during the past few years as has Dr. Kober. He has had an opportunity of observing at our National Capital the practical working of the pure food and drugs law as conducted in the department of U. S. agriculture.

It is of vital interest to the inhabitants of every state in the Union. In this age of financial aggressiveness a very large number of people endowed with capacity for accumulating wealth, and devoid of conscience, resort to every conceivable device to acquire an easy livelihood regardless of questionable or at all honest methods. This unfortunate condition has made it necessary to enact National and State laws in the effort to regulate and stop this nefarious business. At present law is absolutely necessary, but an earnest campaign of educational enlightenment should go hand in hand with law. We must create a wholesome public sentiment to see that the law is enforced. The public must realize that this movement is for the protection of the masses rather than to better the condition of the medical profession. Selfishness does not enter into this movement. Too much care can not be exercised in handling these investigations. Personally my experience has not been unpleasant in getting people to comply with the requirements, with the exception of obtaining samples of maple syrup for

Digitized by Google

examination at our State Laboratory. At the several stores where syrup was kept for sale, no merchant had on hand the article in anything less than sealed gallon cans. They were reluctant to open a package for the purpose of supplying a pint as they might be unable to sell the balance of the can. I plainly see the justice of the case, from the merchant's standpoint, and would suggest some change if possible in the wording of section 5480. This seems a very trivial matter, but I think it important that we avoid antagonizing anyone while endeavoring to build up a wholesome public sentiment.

I believe the discussion on this subject during the past few years has already led people to look with suspicion on many proprietary medicines and to look with favor on the strict inspection of foods and drugs, especially milk and meats. People like to get exactly what they pay for, not a substitute which is said to be "just as good." Vermont is to be congratulated upon keeping abreast of the times in this great movement of safeguarding the public against the knaves who seek personal gain at the expense of the health and happiness of the public.

It is a well-known fact that the average person is easily deceived regarding matters pertaining to his health if done by a designing person.

Let the good work of legal restraint and liberal education go on until we have only honest people, then we shall have pure food and drugs.

VITAL STATISTICS.

By Cressy L. Wilbur, M. D., Chief Statistician, Bureau of the Census, Washington.

This is the third time that I have had the opportunity of addressing the Vermont Health Officers' School, although the first time that I have had the pleasure of visiting your capital city. I have not prepared a regular paper on the subject of vital statistics, as has been my custom heretofore, but shall simply talk briefly on some features of my work on mortality statistics. The annual Report on Mortality Statistics, published by the Census Office, includes the mortality statistics of Vermont in considerable detail. Each member of this school is welcome to a copy of this report and one will be mailed if request be made of the Bureau of the Census. I shall confine my remarks to a few points on the registration of vital statistics, more especially with relation to the proper statement of the cause of death and the complete registration of births.

The table which I show you may be familiar to those of you who were here three years ago as it is practically the same as the one that I presented when I spoke before you in 1906. I have merely added the data for the

Digitized by Google

Item	Years																	
	1900		1901		1902		1903		1904		1905		1906		1907		1908	
	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.	Number	Per cent.
Total deaths:																		
Registration states	342917	100.0	332908	100.0	318636	100.0	327905	100.0	349855	100.0	345863	100.0	551005	100.0	550345	100.0	567945	100.0
Vermont	5692	100.0	5717	100.0	5205	100.0	5629	100.0	5576	100.0	5943	100.0	5869	100.0	5696	100.0	5639	100.0
Unknown nativity:																		
Registration states	4788	1.4	5498	1.7	5105	1.6	4963	1.5	5119	1.5	4182	1.2	7916	1.5	7899	1.4	7898	1.4
Vermont	133	2.3	218	3.8	189	3.6	167	3.0	168	3.0	157	2.6	132	2.2	91	1.6	87	1.5
Unknown age:																		
Registration states	1188	0.3	1394	0.4	1126	0.4	1366	0.4	1206	0.3	678	0.2	1579	0.3	995	0.2	756	0.1
Vermont	40	0.7	58	1.0	56	1.1	56	1.0	51	0.9	43	0.7	47	0.8	26	0.5	8	0.1
Unknown cause of death:																		
Registration states	1771	0.5	1120	0.3	1083	0.3	901	0.3	1051	0.3	743	0.2	1840	0.3	1358	0.2	1126	0.2
Vermont	78	1.3	60	0.1	61	1.2	46	0.8	51	0.9	35	0.6	56	0.1	17	0.3	13	0.2
Ill-defined causes of death:																		
Registration states	13116	3.8	10865	3.1	9402	3.0	8556	2.6	8254	2.4	8106	2.3	10950	2.0	9677	1.8	9911	1.7
Vermont	308	5.4	255	4.5	208	4.0	161	2.9	178	3.2	175	2.9	89	1.5	87	1.5	34	0.6
Unknown parent nativity:																		
Registration states	26289	7.7	29182	8.8	28462	8.9	29926	9.1	33115	9.2	29635	8.6	45413	8.6	47127	8.6	46883	8.3
Vermont	*	*	*	*	*	*	1446	25.7	1127	20.2	1039	17.5	987	16.0	979	17.2	876	15.5

*Certificate did not call for parent nativity.

Digitized by Google

past three years. Thus the table shows the ratios of certain items indicating imperfect registration, as compiled at the Census Office in Washington, for Vermont in comparison with the averages for the registration states. The comparison of the statement of nativity or the birthplace of the individual as reported on the certificate of death shows in how many cases out of a thousand the transcripts did not report the nativity. Vermont did not report the nativity in twenty-three cases out of every thousand (2.3 per cent) in 1900. Unknown causes of death in Vermont amounted to thirteen out of every thousand (1.3 per cent) in 1900, and ill defined causes of death to fifty-four (5.4 per cent) out of every thousand. This table for 1900 to 1905 I have colored red for each item* for which the Vermont statistics are less accurate than the average for the registration states, and have added columns for 1906 to 1908, from the inspection of which you will see that Dr. Holton has been doing some excellent work. Vermont now exceeds the average with respect to unsatisfactory returns only for the first and last items shown, and for unknown age and unknown cause of death Vermont is on a par with the average registration state. For ill defined causes of death Vermont has greatly improved since 1900, and is now superior to the average in this respect. It is only in unknown nativity and unknown parent nativity that Vermont falls behind, especially in the latter; this question was not a part of the State certificate until 1903, and greater care should still be used in obtaining complete returns under this head. The marked improvement in the quality of the Vermont returns shows careful work by the State Registrar and interest on the part of the local registrars, and I predict that 1909 will afford a still more favorable showing. The table shows a very marked improvement indeed since 1900.

Dr. Holton.

Last year I wrote seven or eight hundred letters to the town clerks and officers to get the accurate cause of death.

In regard to unsatisfactory statements upon death certificates, Dr. Holton corresponds with the doctors, health officers, and town clerks in much the same way that we do with him. The position of local registrar is not a very remunerative one, and there may be much annoyance and trouble in the effort to secure complete and satisfactory returns with very little recompense therefor. In this connection I am reminded of an amusing little anecdote that I recently read. A gentleman driving along a country road in Iowa came to a field in which a small boy was diligently hoeing potatoes. Stopping his horse he waited until the boy came near, and asked him what he was getting for his work. The boy replied: "Nothin' if I do, and hell if I don't." The local registrar has to do a great deal of work to help improve the vital statistics, and receives little direct compensation except the knowledge that his work has been of benefit to his state and country. When

*Indicated by boldface type in the printed table.

Digitized by Google

Dr. Holton sends to Washington returns containing imperfect data, we ask him to correct them or to see that they are corrected. He knows that certain omissions will be inquired into, so he is on the watch for them and refuses to accept returns from you until they are satisfactory.

The organization of the Vermont registration service is somewhat peculiar. Dr. Holton is your state registrar so far as the reception and completion of the returns are concerned, but the state registrar who preserves the returns as permanent legal records is not the secretary of the State Board of Health but the Secretary of State. Ordinarily local registrars of vital statistics are charged with the duty of registering all births and deaths that occur in their districts; they keep a register thereof, and send the original certificates to the central registration office at the capital of the state. The local registrar has the important responsibility of issuing burial permits. When a death certificate is filled out it is taken by the undertaker to the local registrar. The local registrar can then see whether the cause of death has been properly stated and whether the personal particulars and medical certificate of cause of death have been properly filled out as required by law, and he should not issue a burial permit until the certificate of death is properly made out. In Vermont the certificate of death must be filled out by the attending physician and given to the family or undertaker. By them or him it is delivered to the health officer; the health officer issues the burial permit, and then, during the first week of the following month, sends the certificates to the town clerks, who record them. There is a possible difficulty or danger in this procedure which would be obviated if all these duties were imposed upon one man. Where you have two men at work upon a given task, if one neglects his part of the work it may seriously interfere with the results, even if the other fully performs his duty. I do not intend to criticise the Vermont law. You have a law covering this subject; it is a good law, and can give good results. As health officers, you should understand your duties as local registrars, so far as relates to the examination of certificates of death and the issue of burial permits. You should know what constitutes a definite cause of death. You should never under any circumstances issue a burial permit until you have received a proper certificate of cause of death, because after the permit is issued by you it is out of your jurisdiction. After the permit is issued there remains no way to insure compliance with your requests for further information. If you refuse to grant a burial permit until the death certificate is filled out properly and to your entire satisfaction, it is up to the attending physician to fill in the necessary information, and nine times out of ten he will give a correct cause of death. After a burial permit has been issued upon a death certificate not properly filled out, it is more difficult to require the attending physician to comply with requests for more specific statements. The time to attend to your part of the transaction is before the issue of the burial permit. There is a penalty imposed upon a person burying a body without a burial permit, so that it is necessary for the undertaker to see that a satis-

Digitized by Google

factory certificate is presented to you in order that he may receive a permit for the burial.

After the health officer receives the death certificate and issues the burial permit, it is the duty of the town clerk to make a record of the death, and to make his return thereof to the Secretary of the State Board of Health. There is a severe penalty if he neglects or refuses to make *prompt* returns. Under the old law Vermont was the slowest state in the Union in sending returns of deaths to the Bureau of the Census. The present requirement for prompt monthly returns will remedy this difficulty, and there is no longer any reason why the Vermont transcripts of deaths should be late. The certificate of every death which occurs in this State during August should be transmitted to the central registration office by the 5th of September. All deaths should be registered before interment, and all births should be registered within ten days, and certificates forwarded to the State Registrar's office within thirty days thereafter without fail, as now required by the Vermont law. The law provides a penalty for neglect and prosecution should follow if it is violated. A local registrar who is prompt is usually a good registrar. A local registrar who is neglectful in sending his returns as required by law is apt to overlook some returns.

As I understand the Vermont law in regard to the registration of births, the health officer has no special function for this class of returns. The town clerks are the local registrars for births. The complete registration of births has been greatly neglected. It is a subject that is becoming of increasing importance. With the rapid growth of population, the crowding of our cities, and the recent laws regulating the employment of children, it becomes increasingly necessary to know the dates when children were born. There have been laws in force in Vermont for fifty years providing for the registration of births. I do not know just what proportion you are registering of the births that occur in your state. Dr. Holton, do you think you get ninety per cent of the births in this state? (Dr. Holton: "Yes, I do.") If you secure as high a proportion as ninety per cent, you are doing better than many other states. Are there any town clerks in this audience? Do you get all the births occurring in your districts? "Yes. I live in a small town and I know about all the people and of course hear of the births and often times get them in that way where possibly I wouldn't be able to if I lived in a larger territory."

Mr. H. H. Wheeler.

Two or three years ago I called upon a man to get the name of a child who was born. He had six or eight children about there. They had all been born in our town and still we had had no record of their births. I think we get most of the births occurring in my town. My town is not large and I know a good share of the folks.

The health officer has nothing to do officially with the registration of births, but in your private capacity it is the duty of every physician among

Digitized by Google

you to report the births in his practice to the town clerk in order that he may be able to make complete returns.

Mr. G. P. Burbee, Winhall.

I have known cases where the doctor attending births has not reported for three months.

The United States Census Bureau has collected all the available records of births in the entire United States for 1908, and I am preparing a special report thereon. We intend to analyze these statistics, showing just how valuable or how worthless they are, and we may be able to select a few localities which afford data sufficiently complete and satisfactory to begin a registration area for births. If Vermont shows a good record, perhaps this state will be eligible for admission to such an area. There should be steady improvement and enforcement of the penalty of the law. A town clerk may be reluctant to prosecute a physician for failing to report a birth within ten days after it occurred. Section 3292 states that "A physician or midwife, if one be present, otherwise the head of the family in which the birth occurs, shall, within ten days thereafter, fill out and file with the town clerk a certificate of birth in the form prescribed in the following section." How many physicians or midwives have been fined under this law during the past year? None, I presume. There doubtless have been many who have failed to comply with this section. I would suggest that the town clerks send a notice containing a copy of this section to each person who fails to comply with the law, whether a physician or a midwife, and then, in the event of continued violation of its provisions, institute a prosecution. Every physician and midwife should have ample notice of the requirements of the law and should become fully acquainted with its provisions as it affects him or her; the best way to secure this result is to send each a copy of the law and at the same time a notification that it will be enforced and that any violation will be followed by prosecution. A mere bluff does not do good, but rather it does harm; no such notice should be sent unless it is intended to actually *enforce* the law, any violation thereof being, in fact, followed up by prosecution. The penalty is only five dollars. It does not seem to me that a town clerk has any discretion under the section. It plainly states that any physician who violates this law *shall* be fined five dollars for the use of the town in which the birth occurs. If the physicians here present as health officers have any certificates which they have failed to file with the town clerks of their respective towns, they should not hesitate to go directly to the town clerks and tell them that they have violated section 3292 and are liable to a fine under section 3296, and request that suitable action be taken. They could well afford to forfeit the small amount for the purpose of securing added respect to the administration of the law. I warrant you many violations will not occur if a penalty is imposed. The law is a reasonable one; only enforce it. If it is fully enforced, there will be no question but that Vermont will be entitled to enter into the registration

Digitized by Google

area for births when that shall be constituted. You have had laws on your statute books for at least fifty or sixty years for the purpose of securing the registration of all births that occur in the state, and yet you do not know what the exact birth rate is to-day.

My chief purpose in referring to the subject of birth registration is to urge you to help to enforce the law, as it now stands upon your statute books. Its provisions are reasonable, and the penalties provided for their infraction are moderate. The only way to insure obedience and respect for law is to enforce it; otherwise it were better repealed, or modified so that it can be enforced to the letter. *Enforce the law!*

DISCUSSION.

Should the physician number the certificates himself or are they numbered by the town clerk as they come in?

Mr. E. W. Spencer.

They are numbered by the town clerk as they are presented to him.

Is it possible to issue a burial permit without a doctor's certificate? If a person dies without a doctor what are we going to do about issuing a burial permit? We have had this thing occur in my town. In case a person dies suddenly without a physician at his side and we are not allowed to issue a burial permit without a death certificate, what is to be done by the health officer under such circumstances?

Dr. H. D. Holton.

The health officer has authority to order a post-mortem. This comes under section 3325.

Mr. S. M. Nutting, Westminster, Vt.

Suppose the health officer thinks there is no reason for the post-mortem; that there is no suspicion of foul play. Suppose a man was found dead by the roadside with no suspicion of foul play, what is the duty of the health officer in such a case?

Dr. H. D. Holton.

What have you put in your certificate as the cause of death?

Mr. S. M. Nutting.

Found dead.

Dr. H. D. Holton.

A great many people are found by the roadside who are not dead. I don't see how a health officer can issue a burial permit unless he has some

Digitized by Google

cause of death. If I should receive a certificate with the cause of death—found by the roadside—I should be obliged to write back to the town clerk for further information. Sometimes I write to the physician and he says he doesn't know what the cause of death was, for the man was dead when he got there. Of course that goes into the indefinite column. Sometimes I get marasmus as a cause of death; also indigestion. I know a great many people die of angina. I write sometimes to the attending physician, if I know who he is, and sometimes to the town clerk for more definite cause and if it is impossible to gain any further information on the subject, the cause of death has got to go into the indefinite column. The town clerks send me some of the most curious causes of death. Recently I got a cause of death—interstate nephew. We have great lumber interests throughout our state employing many Germans, Italians, etc. They have a birth in their family and are not ready to name the child. When I write to the town clerk for the name of the child, he writes back to me he hasn't got it. Then I write again and tell him to find out what they have decided to name the child and in reply I get a letter telling me that the family has moved away and there is no name registered with the birth. Here is the question—a child is born, the parents are not ready to name it, they can't think of a name suitable for the baby; what will you do under such circumstances? Answer: I would name the child for them. That is the best way out of it.

Dr. A. O. Morton, St. Albans.

In case of a premature birth, a birth at five or six months of a dead child, what is done?

Dr. H. D. Holton.

It should be reported as a birth after five months and miscarriage, and before that time abortion.

Question: Suppose the attending physician goes out of town and neglects to give a certificate of death, and they have the funeral and the remains arrive at the cemetery and the sexton refuses to bury the body because he hasn't the burial permit, and the health officer promises to give one as soon as the doctor returns to his home, is it all right for the sexton to bury the body on the promise of the health officer to get such a certificate as soon as the attending physician returns to his home and provides the health officer with the certificate of death?

Dr. H. D. Holton.

They should think of such things before they arrive at the cemetery. The attending physician should certainly understand that it is necessary to provide the health officer with a death certificate before he is able to grant a burial permit. The sexton had no right whatever to bury that body unless he had in his possession a burial certificate.

Digitized by Google

Dr. C. S. Caverly, Rutland.

I saw a case in my office twice. The patient died six weeks later and had had during the meantime no other physician. The health officer of the town in which he died sent the undertaker to me for a certificate of death. I declined to give one because at the time I was consulted the man apparently had nothing serious the trouble.

Dr. Wilbur referred to the system of registration here in Vermont. It has never been our good fortune to have a meeting of the various town clerks throughout the state in order that kindred subjects could be discussed as we are doing this morning. Health officers should thoroughly understand the importance of vital statistics and more especially the item of cause of death. Health officers should refuse to accept death certificates until the cause of the death is set down definitely and to their satisfaction. I know the health officers are better qualified to tell whether a death certificate is properly filled out than the majority of town clerks are.

Dr. C. F. B. Willard.

There is one question which I wish to ask. I have oftentimes seen a long list of causes of death issued by the department which we are supposed to be governed by. My question is what class of causes of death does the department object to? I was called to see a baby a week or two old. I doctored it for croup. I sent a culture to Burlington to the State Laboratory and the report came back negative—no diphtheria germs present. In nine weeks the child died, evidently choking to death.

I had another case of gastric trouble. I knew she had the symptoms of ulceration of the stomach, but the conditions led me to think perhaps it was malignant. She vomited blood twice. This might have come from a cancer or from an ulcer. I left the patient one day expecting she would live for some time. The next day I went back and found her in a comatose condition. I applied for an autopsy but did not get it.

Mr. H. H. Wheeler, South Burlington.

How are we to know whether the cause of death is correct or not? Some of our best doctors give the cause of death as old age. Sometimes they just use an x; what shall we do when the attending physician is uncertain as to the exact cause of death? We do not know whether the diagnosis made by the attending physician is correct or not and there are times when we have reason to believe there might be improvement.

Dr. C. L. Wilbur.

With reference to the dual system of registration officials in Vermont I may say that it has certain points of advantage. I am not criticising the Vermont law. It is not exactly the type of law found in other states. It is a good law and much harm can be done by changing a good law and adding

Digitized by Google

an amendment which will make it worse. If you will see that your law is enforced, you will have as complete registration of births and deaths as any state in the Union. What you lack is the enforcement of the law which you already have on your statute books. Health officers should support the town clerks, and they in turn will aid you. The health officers are the local registrars so far as the acceptance of the death certificate is concerned. If you have any births in your own practice, you should comply with the law and register them promptly. Violations should be reported. You should take as much pride in having correct birth records as death records. The local registrar, who is responsible for the complete registration of births in his district, should make a report to the central office every month, and he should make a report whether he has any births to report or not. If he has no births to report, he should state that fact so that the central office may know that he is attending to his duty as local registrar and that no births have escaped registration. The local registrar should read the local papers, and when mention is made of a birth in his district he should make a note thereof, and if such birth is not reported within the specified time prosecution should follow for the violation of law. Make this a matter of routine and it will not be difficult. Every time a child's birth is reported in the paper, the registrar should await the certificate of the birth, and if it has not been recorded after the proper interval, ascertain the name of the attending physician or midwife and, if necessary, prosecute for the delinquency. Very few prosecutions will be necessary when it becomes known that the law is to be *executed,* not violated with impunity. Some mention has been made here of the difficulty in making a report when the child has not been named by either parent. This is provided for in the Vermont law by the provision for filing the birth record within the ten day limit as usual, and then, when the name of the child is not given, the town clerk is to send to the father a certificate calling for the name of the child. The doctor has no excuse whatever, under this provision of the law, for pleading as a reason for delay that the child was not named.

Digitized by Google

NOTES ON VERMONT WATERS.

By C. P. Moat, Chemist.

So many inquiries have been received lately concerning various parts of water analysis and the interpretation of the same, that it was thought well to review the subject at this time. Since the last paper on this subject, there have been many new health officers, and the work is unfamiliar to many of these men. Furthermore as we do many analyses of private supplies, the health officers are frequently called upon to shed light upon the report from the Laboratory. If part of this talk is somewhat elementary, it will be on account of the questions which have been asked us.

The Laboratory makes sanitary analyses of all water supplies in the state, whether public or private, free of charge, with the sole restrictions that the sample shall be sent in the outfit furnished by us and that transportation charges shall be paid by the sender. The reason for the first requirement is to have a sufficient amount and that it shall be contained in a clean bottle. As soon as possible upon the receipt of a request, an outfit is forwarded by express with instructions for filling the same, also a certificate which is to be filled out with data concerning the location of the supply. This information is necessary in order to interpret the result, as it is the only field inspection given in many cases. Besides the above enclosures, are cloth, twine and wax for sealing the bottle and a return envelope tag.

On arrival at the Laboratory, the specimen is sampled for bacteriological examination which determines the presence or absence of harmful bacteria, then examined physically for color, odor and appearance, properties appealing to the æsthetic side and which, while not injurious to health, count against the use of the water by the consumer, and chemically for the following:

Residue on evaporation—the solid matter left after evaporation and drying at 100 C. This matter includes both organic and inorganic substances but the individual constituents are not separated in the usual routine work.

Chlorine—determined as chloride in combination with sodium as sodium chloride (common salt). In unpolluted waters, the amount of chlorine varies with the location. This is the normal chlorine for that region, one of the standards on which polluted waters are judged, as chlorine being a constant and considerable constituent of human waste, a rise above the normal indicates pollution.

Organic matters—it is customary to determine the nitrogen in various forms in order to base our estimation of organic matters which include living organisms, both vegetable and animal, fecal matters, products of organic life and decaying vegetation.

Nitrogen in water analysis is represented as existing in four forms.

Albuminoid ammonia—representing the nitrogen contained in the various

Digitized by Google

organic substances in an undecomposed state but which will break up under certain conditions. These substances include products of organic life which serve as media or growing places for bacteria.

Free ammonia—gives the nitrogen in water in either a free or saline condition. Usually it is formed by the natural decomposition of nitrogenous organic material, being the first stage of decomposition. Its presence in water indicates that the organic matter in the water is in a decomposing condition, suggesting sewage. Deep wells often contain this in considerable amount which cannot be laid to decomposing matter.

Nitrates and nitrites—In the course of decomposition, the above forms of nitrogen pass to the stage of nitrous and nitric acids or in combination with minerals as nitrites and nitrates. Nitrites indicate present decomposition, the same as free ammonia, while nitrates show that previously the water has contained large quantities of organic matter which are now mineralized. The presence of organic matter in itself may cause intestinal trouble, but it is especially dangerous on account of its friends, the bacteria of disease (pathogenic bacteria) which often travel with it.

The results from the foregoing examination are grouped together and considered in connection with a description of the location and the interpretation of the analysis made. This is stated in the form of remarks on the report and it is these remarks which I wish to explain, as very often the terms used in the remarks are not understood, that is, normal, polluted, contaminated, previous pollution, poisoned, etc.

A normal water is one that has not received any human, animal or industrial waste. It is a safe water in that it is not liable to cause disease, but it may not be attractive for use when it is colored or tainted by vegetable growths. These vegetable growths (algæ) occur in surface waters and in ground waters which are stored in the open air and sunlight; they frequently cause odor and taste in many waters, making them very objectionable to the consumer and decrease the value of the water but, as far as we know, they are not harmful. The word wholesome is used to describe a safe water, that is not befouled, colored, or tainted enough to injure health or to make the water too unattractive for use.

A polluted water is one that has received and still holds the excreta of human beings or animals or industrial wastes. Pollution may be used as a general term to cover all substances artificially mixed with water.

Contaminated water. When a polluted water has received or holds excrement from human beings or animals, it is known as a contaminated water.

An infected water is one that is known to actually contain pathogenic bacteria capable of producing disease.

A poisoned water is one which contains some poisonous chemical substance, such as lead.

In considering a water we have to know whether it is a surface or ground water. Surface waters are those running along the surface of the ground in contact with the air, such as rivers, brooks, lakes and ponds, etc. Waters

Digitized by Google

of this class may contain high color, vegetable matter, odor, etc., and still be normal waters, but in the case of ground waters, color and odor are not normal. Ground waters are the waters that have penetrated the soil and have accumulated on some more or less impervious stratum. Sometimes they make their appearance on the surface as a spring or they are tapped by boring or digging, as a well. There is a popular idea that these ground waters occur as streams under the surface of the earth, whereas they are present as a saturation of the soil rather than as a body of water. This saturation of the soil is the ground water, and its upper surface is called the water table. The height of this depends on rain fall and geological formation and while it runs somewhere parallel to the surface contour, the underground formation determines its level. In some places it crops through the surface forming a spring, or at other places it is so near the surface that marshy places are formed. All permanent ponds and beds of rivers are outcropping of the water table.

We will now turn to the data on the charts. These figures are taken from actual analyses of Vermont waters.

TABLE I.—SURFACE WATERS.

Parts in 1,000,000.

	Appearance.			Odor.	Residue on Evaporat'n.	Ammonia.		Chlorine.	Nitrogen as		B. Coli.
							Albuminoid.				
	Turbidity.	Sediment.	Color.	Cold.	Total.	Free.	Total.		Nitrates.	Nitrites.	
I.	Sl.	Sl.	15	0	88.	.012	.166	.6	.050	.000	Absent
II.	V. Sl.	V. Sl.	0	0	54.	.042	.132	.5	.100	.000	Absent
III.	None	None	20	0	40.	.004	.210	.5	.160	.000	Absent
IV.	Sl.	Sl.	10	2c.	122.	.056	.142	.6	.100	.000	Absent
V.	Dirt	Hy.	80	5a.	206.	.192	.210	44.0	.080	.020	Present
VI.	Sl.	Cons.	25	2v.	104.	.086	.200	1.0	.200	.000	Present
VII.	Sl.	Sl.	12	0	98.	.080	.094	.8	.070	.000	Present
VIII.	Sl.	Sl.	25	20	124.	.088	.184	3.2	.500	.000	Present

TABLE I.—SURFACE WATERS.

The four upper lines are examples of normal surface waters. Note the variations in color, total solids and organic matter which change according to the source whether the water has dissolved much or little material, or contains varying amounts of vegetable material. The chlorine is normal, as the normal chlorine for Vermont runs from .3 to .6 part per million, and there is no sewage bacteria present. The nitrates are low.

The lower four lines are from contaminated surface waters, all showing presence of sewage bacteria, chlorine higher than normal, and excessive organic matter. The second and third specimens do not show excessive

Digitized by Google

pollution chemically, but they are proven to have sewage in them and the colon bacillus is always found, making them a contaminated water. This is the case with the Lake Champlain supply of the city of Burlington. Chemically it was but slightly polluted, but the sewage of the city and the surface wash from Winooski river had access to the intake, and sewage bacteria were usually present. Since the filter plant has been put in operation and the sewage bacteria are no longer found, the typhoid figures show a remarkable change.

Year.	Cases.	Remarks.
1903	29	
1904	36	
1905	34	
1906	43	
1907	23	Warning notice given. People boiling water
1908	20*	
1909	2	

TABLE II.—GROUND WATERS.

Parts in 1,000,000.

	Appearance.			Odor.	Residue on Evaporat'n.	Ammonia.		Chlorine.	Nitrogen as		B. Coli.
	Turbidity.	Sediment.	Color.	Cold.	Total.	Free.	Albuminoid. Total.		Nitrates.	Nitrites.	
I.	None	None	0	0	44.	.004	.042	.6	.050	.000	Absent
II.	V. Sl.	V. Sl.	0	0	126.	.006	.046	.6	.200	.000	Absent
III.	Sl.	Sl.	0	0	80.	.016	.066	.5	.200	.000	Absent
IV.	V. Sl.	V. Sl.	0	0	236.	.006	.058	.6	.300	.000	Absent
V.	Dirt	Sl.	10	3a.	265.	.048	.150	10.	.600	.015	Absent
VI.	None	V. Sl.	0	0	517.	.230	.078	24.	4.000	.020	Present
VII.	Sl.	Sl.	5	0	290.	.006	.094	8.6	.500	.0 3	Present
VIII.	Dirt	Cons.	10	3a.	748.	.144	.280	92.	25.000	.025	Present

TABLE II.—GROUND WATERS.

The first four are normal ground waters showing absence of color and odor, slight amount of organic matter, normal chlorine and no sewage bacteria. The total solids vary according to the nature of the underground conditions through which they have passed. Note the contrast in the lower four lines of figures: color and odor showing imperfect filtration or surface

*Sixteen of these occurred before filter began to operate. Of the other four, two were proven to have been imported. In 1909 one of the cases was an imported one.

Digitized by Google

wash; chlorine high, nitrates and high free ammonia present except in number three, which shows a very good filtration chemically, but either incomplete bacteriologically or is receiving some surface contamination, as shown by the sewage bacteria. The difference between the four normal and the four polluted and contaminated specimens is marked.

TABLE III.

Date of Examination.	Appearance			Odor.	Residue on Evaporat'n.	Ammonia.		Chlorine.	Nitrogen as		B. Coli.
	Turbidity.	Sediment	Color.	Cold.	Total.	Free.	Albuminoid. Total.		Nitrates.	Nitrites.	
1906	Sl.	Sl.	0	V. ft.	158.	.062	.086	12.	4.100	.007	Absent
1907	Sl.	Sl.	0	0	184.	.060	.062	11.	8.200	.008	Absent
1907	Sl.	Sl.	5	0	246.	.092	.104	19.	11.000	.008	Present
1908	Sl.	Sl.	0	0	156.	.010	.064	10.	1.600	.000	Absent
1909	Sl.	Sl.	0	0	185.	.008	.076	7.6	1.000	.000	Absent

Table III. shows a series of analyses of a spring and illustrates what we mean by the term previous pollution. The spring is situated not far from a barn and barnyard, as is shown in A and B. These two samples were taken in warmer weather than C, which accounts for the higher free ammonia. At the time that B was made a cesspool of the blind drain type had been recently put in, but its influence was not felt in that examination. Later in the year, sample C was taken and showed the effect of the cesspool in the rise of chlorine, nitrates and presence of sewage bacteria. After that analysis was made, the cesspool was removed, and the surroundings, including the barnyard, were thoroughly cleaned up, and a year later sample D taken, which shows good filtration in that the excess of organic matter has been removed and no sewage bacteria came through. This is what we call previous pollution, or showing the effect of seepage through a polluted soil, as shown by the high chlorine and nitrates; two constituents that require long time and much attention to remove. Sample E, one year later, shows even more filtration and purification by the soil. The question of the meaning of the letters and numbers in the physical examination has been brought up. We express the sediment as none, v. sl., sl., cons. and heavy, each being a larger amount than the preceding. A cons. and a hy. sed. would be one easily noticed by the consumer if the bottle of water was allowed to stand. Turbidity is expressed as none, v. sl., slight, dist. and decid., the latter being readily distinguished in a glass of water by the consumer. This is now reported in states where there is much turbidity in terms of an arbitrary scale based on the amount of finely divided silica contained in the standard. Color is expressed in terms of an arbitrary stand-

Digitized by Google

ard known as the platinum scale, distilled water being 0 and a surface water like Lake Champlain about 20. The quality of the odor is marked by the letters—

v vegetable.
a aromatic.
g grassy.
f fishy.
e earthy.
m moldy.
M musty.
d disagreeable.

The odor is important in ground waters, as it oftens gives a decided evidence of pollution, while in surface waters it may indicate the kind of vegetable or animal growth present. The intensity of the above odor is expressed by numerals meaning as follows:—

0 no odor.
1 very faint—An odor that would not be ordinarily detected by the average consumer, but that could be decided by the laboratory.
2 faint—An odor that the consumer might detect if his attention was called to it.
3 distinct—An odor that would be readily detected and that might cause the water to be regarded with disfavor.
4 decided—An odor that would force itself upon the attention and that might make the water unpalatable.

Dr. Arthur Morton, St. Albans.

I shall not attempt to enter into any technical discussion of Mr. Moat's paper. There are, however, two points which I wish to emphasize. First—the danger of using well water in any thickly populated community. Second—the necessity of towns absolutely controlling the watersheds of the reservoirs from which they obtain their public water supply. To illustrate these two points and perhaps to bring them home more forcibly to you, I wish to call your attention to an epidemic of typhoid fever which raged in St. Albans last winter. There is no doubt in my mind that the chief source of infection was due to contaminated well water and it was only through chance or good luck that the disease was not spread by the public water supply. St. Albans is as a rule very free from typhoid fever and up to September 20, 1908, we had had no cases reported for five months. From September 20, to the latter part of November, there were seven cases reported, nearly all of which could be traced to out-of-town infection. During the next three months there were eighty-six cases of typhoid fever reported to the health officer. There were undoubtedly many cases not re-

Digitized by Google

ported as it was a common thing to find cases of walking typhoid which never came under a physician's care. The epidemic was, with the exception of a very few cases, confined to the northwest quarter of the city. Every effort was made to find the source of infection. The various milk routes were examined, the city's water supply was frequently tested and found to be normal. The sewers were all in good condition with the exception of an open sewer, known as Stevens's Brook, which runs nearly through the center of the infected district. The first few people to contract the disease were either non-residents or railroad men whose work took them frequently away from the city. Their excreta was emptied into the sewers with little or no disinfection. This was especially true during the first part of their illness before they came under a physician's care. The sewers from these houses occupied by these people all emptied into Stevens's Brook, so we had this infected open sewer running through the center of the northwest portion of the city. At about this time, October 15, owing to the extremely dry weather, the public water supply began to fail and the water was turned into the mains for only a few hours each day. This procedure drove nearly all the residents of the city to using well water for drinking purposes. This was especially true of the residents of Elm street, where the epidemic was especially active. This street runs parallel with Stevens's Brook for a half mile at a distance of three or four hundred feet. The water from a number of these wells on Elm street was analyzed at the State Laboratory and in all cases the report came back—"Contaminated." It seemed to the Board of Health that owing to the extremely dry condition of the ground, the water from Stevens's Brook must have seeped through the ground and infected these wells. St. Albans obtains its water from two large reservoirs situated about five miles from the city. These reservoirs have a capacity of 250,000,000 gallons of water, enough water to supply each person with 200 gallons a day for nearly six months. As you all remember, last year was exceedingly dry and the supply of water began to fail so that the city was obliged to get an auxiliary supply from Lake Champlain. During the epidemic the city's water supply had been carefully watched but had remained in every way fit to use until along the first of February we got a report from the Laboratory bearing the news "Contaminated—unfit for use." This condition was not unexpected as we had been on the watch for it since the middle of December. During the first part of December, a man living in the infected district became ill with the disease and after a few days, went to his father's home which was situated on the water shed about one half mile from the upper reservoir. He was without medical attention for several days and during this time his excreta was thrown about the grounds without any disinfection. As soon as the attention of the health department was called to the condition, every effort was made to prevent the contamination of the reservoir, but as you have seen, without result. By the time the water supply had become contaminated, we had most of the people boiling all their drinking water, so that probably not

Digitized by Google

more than one or two cases of the fever developed from this source. We have had this fall another case of typhoid on the watershed. In this case, as in the other cases, no care was taken of the stools for some days. As soon as it was reported, every care was taken to prevent the reservoirs from becoming contaminated. Chloride of lime and iron sulphate were scattered over the ground and then we had a furrow ploughed in such a way as to receive the drainage from the infected area of the watershed; into this we sprinkled a barrel of lime and it is needless to say that we are watching the report of the analyses of the water with anxiety. It is experiences like these that make us fear well water in thickly populated towns and that show us the necessity of the towns absolutely controlling their watersheds.

Dr. C. F. Ball, Rutland.

I will necessarily have to confine my remarks to the conditions at home. Mr. Moat has given us an excellent talk on the interpretation of water analyses and we all, I think, appreciate the explanation given by him of the terms used in the reports.

The health officer before me instituted a campaign in Rutland relative to our water supply, which is in a precarious condition. If a case of typhoid fever should occur on the watershed (as is natural with most of Vermont water supplies, which are small brooks running through a hilly country, and as most of our inhabitants live on the borders of the streams) it is very easy to predict what the result would be. It is almost impossible to keep the inhabitants bordering on these streams from contaminating them. There are farmhouses close to the banks along our watershed almost up to the beginning of the stream, nearly three miles. Before Mr. Moore, my predecessor, took up the campaign, the barns were virtually on the edge of the streams so that they gave the accumulations into the streams. In most cases, the outhouses have been removed or moved farther back. As typhoid fever is somewhat an indication of the purity of the water supply, the water supplies should be looked into if there are any cases of this disease. The first year I was health officer of Rutland we had five cases of typhoid fever; four were railroad men who had received their infection from other than the public supply. The other case, the patient had not been out of the city. Some time prior to this case, the water reports had been coming back from the State Laboratory "safe" without any evidence of contamination. So far this year and since last October or November, we have not had a case of typhoid fever. We had one case, so-called, this summer, but the Widal test failed to show any reaction. The water reports come back with an occasional record of contamination. After heavy storms, we get some recent pollution as explained by Mr. Moat. I have not been over our watershed now for a month or six weeks, but as soon as I get an adverse report, I immediately go over it and try to locate the source of any contamination. I have moved several dry closets from the

Digitized by Google

bank of the streams, through the coöperation of the local health officer through whose town the streams flow. If a case of typhoid fever should occur along up the mountain road, it could not help but get into the river. There is no other place for it to go. As our water supply is fairly good and there are no cases of typhoid fever (except an occasional case which probably is imported), I have naturally turned my attention to our ice supply, which certainly needs attention. We haven't a good ice supply in our city. Each of the three ponds from which ice has been taken has been directly infected by several farms. One is a little better that the other two but it is not an ideal source by any means. Two of the ponds are infected with germs, the colon bacilli being found in the north stream and the chemical evidence of contamination being found in the south pond. The source of infection to the north stream is the city poor farm. I have been working to get them to take out this present drainage. I have been to the Mayor, but as Rutland is a dry town, the funds are short, and he did not think it could be done. I have also advised the owner of the pond to appeal to the State Board of Health for relief. The local boards of health, as I understand it, have no direct jurisdiction in cleaning or ordering cleaned away sources of filth along streams. I have talked with the owners and urged them to ask the State Board of Health to meet and inspect the place and order these sources of filth removed, for our ice is not fit to be supplied to families who use ice for cooling drinks, etc. Taking samples of water during ice harvesting has been helpful in cleaning up one of our ponds. I usually take a sample of the water through the channel cut through the ice and have the water examined and then later, in the summer time, I send up a cake of the ice for examination. I think the proper way is to take a sample of water during harvesting and then a sample of ice during the period of consumption.

A. A. Butterfield, North Troy.

I notice nothing has been said about lead finding its way in water conveyed through lead pipes. A certain doctor in our town reported a family had been poisoned by lead coming in through the pipes. They doubted this, so I sent a specimen of the water to the Laboratory of Hygiene. The report came back that lead was present in the specimen submitted. Thereupon quite a number wanted their supplies tested, and I think I sent in something like ten or a dozen specimens for analysis. The supply from the schoolhouse was included in this lot. One man said he had not been as healthy as he was at the time for two or three years. Every one of the specimens contained lead. I advised this man to dissolve two or three feet of lead pipe and take it if it agreed with him as well as all that. I advised changing all of our piping which was of lead to iron. I think wherever you have lead piping, you should change it immediately to iron piping.

Digitized by Google

C. B. Kent, Dorset.

I would like to have Mr. Moat give me a little information. A few days since I sent two water outfits filled from two wells in the town of Dorset. What proved to be true of these two wells may possibly be true of others. Everything in connection with these two wells seemed to be perfect. They were away from every possible exposure. The reports came back last Saturday and while the reports were not identical, both were pronounced bad and contaminated from surrounding soil. There is nothing which could possibly harm them within a radius of thirty rods. If there is some way we can prevent this contamination, we want to do it. This well in which I am particularly interested is a driven well, so nothing could possibly get into it. I would like to ask Mr. Moat how he accounts for this reported contamination from surrounding soil.

Dr. C. O. Probst.

I want to say just a word about the water supply of this town. This morning I had the pleasure of taking a little drive with the President of the State Board of Health and the health officer. We went up to see the water system of this town. The water supply comes seven or eight hundred feet first from a little brook with houses scattered here and there close by; then there is a pond surrounded by a number of houses, including a number of camps. Some of these camps are right at the edge of the water. They are all on a side hill so, when it rains, everything is washed off the earth into this pond. Then the supply extends through a sluggish stream bordered again by houses and finally reaches the reservoir, where there are houses again. The Health Officer stated there were several hundred people in the immediate vicinity of this watershed. You have a gigantic magazine which only needs the application of a match. All you really need is a case of typhoid fever up the stream and your whole town is in danger. I am informed that the water analyses show this water to be pure. With a heavy rain storm and a case of typhoid fever, you will have a terrible outbreak of typhoid fever here. Certainly in these enlightened days, some precaution should be taken to prevent any such trouble as would arise under the conditions just stated.

C. P. Moat.

I am very glad that Dr. Probst stood up here and said what he did. As I remember it, I reported the same thing in 1902 or 1903 to the health officer of Montpelier. We had the same thing discussed before at one of our health officers' schools and the city government at the time was well aware of the existing conditions. We hope the advice from Columbus, Ohio, may have more effect than the advice from Vermont.

We find a great many samples of water containing various amounts of lead running from .15 parts per million up to as many as 74 whole parts, and as

Digitized by Google

lead is an accumulative poison, it is dangerous in drinking water in the slightest amount. We send out our outfits which contain one gallon of water, and after we have finished our regular routine examination, that is, the regular sanitary analysis, if there is a liter and a half, which is equal to one and a half quarts, we make a qualitative test for lead and a quantitative test if possible. If we find a trace of lead present, we send for another sample of water. We deem it wise to know the exact amount of lead, and although in many cases they do not change their piping, they cannot say we have not given them a warning.

Regarding the ice supply, I would say that a perfectly clear, transparent piece of ice containing no snow ice or bits of dirt enclosed, is safe to use. If it contains organic matter, especially if it comes from a polluted water, it is not safe. Dr. Wheeler, who did post graduate work in our laboratory, found that the typhoid bacteria were killed in the process of freezing, but his work was done on a laboratory scale. Messrs. Clark and Gage of Massachusetts, working on larger amounts of ice, put forth the statement that the bacteria are mechanically excluded in the process of freezing.

Regarding Mr. Kent's question, I would say I am very sorry Mr. Kent hasn't the reports with him, but as I wrote him, it is a water showing the effects of previous pollution and if the organic matter present is low and well oxidized and no sewage bacteria present, it is perfectly safe at the present time, but being in the nature of a filtered water it needs watching. Not knowing the geological conditions existing there I cannot say anything definite about the origin of this pollution. The pollution may travel quite a distance underground and be well filtered when it reaches the wells. Analytical work does not do much good unless you get outside inspection. For instance, you might have a case of typhoid fever near Berlin Pond to-day. The water supply of Berlin becomes infected. This supply is carried on down to this town and in the course of two weeks an outbreak occurs in Montpelier. It might be two or three weeks more before you look into the original source of contamination and by that time there might be no infection. Field inspection is of paramount importance in surface supplies and field inspection is the only way to guard against these things.

Digitized by Google

SPECIMENS EXAMINED AT LABORATORY OF HYGIENE DURING THIRD QUARTER, JULY, AUGUST AND SEPTEMBER, 1909.

Waters.

Ground Waters:		
Normal	80	
Showing present pollution	28	
Showing past pollution	56	
Showing past and present pollution	52	
Surface Waters:		
Normal	55	
Polluted	29	
Total		300

Sputum for Tubercle Bacilli.

Male:		
Positive	51	
Negative	110	
Female:		
Positive	38	
Negative	124	
Sex not stated:		
Positive	4	
Negative	8	
Total		335

Cultures for Diphtheria Bacilli.

Positive	116	
Negative	202	
Suspicious	4	
Total		322

Blood for Widal Reaction.

Positive	69	
Negative	141	
Total		210

Blood for Malaria.

Positive		
Negative	5	
Total		5

Digitized by Google

MILK AND CREAM.

Above standard	62	
Below standard	14	
Total (detail table following)		76

FOODS.

Above standard	153	
Below standard	17	
Total (detail table following)		170

CREAMERY BY-PRODUCTS FOR PASTEURIZATION.
(Skim Milk and Buttermilk).

Positive	38	
Negative	20	
Total (detail table following)		58

DRUGS.

Legal	58	
Illegal	19	
Total (detail table following)		77

MISCELLANEOUS ANALYSES.

Positive	19	
Negative	60	
Unclassified	6	
Total		85

LIQUORS EXAMINED UNDER PROVISIONS OF THE FOURTH CLASS LICENSE LAW.

WHISKEYS.

Passed	5	
Not passed	5	

MALT LIQUORS.

Passed	10	

MISCELLANEOUS LIQUORS.

Passed	6	
Not passed	1	
Total		27
MEDICO-LEGAL CASES (DETAIL TABLE FOLLOWING)		46
Total number of examinations made		1712

Digitized by Google

Milk—Below Standard

Specimens Examined at the Laboratory of Hygiene during Third Quarter, 1909

Laboratory Number	Date	Obtained From	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
70175	7- 6-09	Mrs. Minnie Ladoe.....	Enosburg Falls.....	13.8	9.0	4.8	Dirty.....	No. 2.
70177	"	"	"	12.7	8.9	3.8	"	Contains hairs No. 4.
70178	"	"	"	12.1	8.8	3.3	"	" " No. 5.
70420	7-20-09	D. E. Wright	Burlington.....	12.6	8.7	3.9	Original bottle very dirty	Mrs. Arthur, producer.
70425	"	J. G. G. Downing.....	"	13.9	9.6	4.3	Dirty.....	Catlin, producer.
70427	"	Geo. Saiger.....	"	11.75	8.5	3.25	"	Poor quality.
70434	"	Mrs. F. X. Saltus.....	"	12.5	8.9	3.6	"	Goodrich, producer (Goodrich can)
70438	"	T. P. Clay.....	"	12.5	9.1	3.4	"	Steele & Butler, producer.
70631	7-28-09	E. A. Wilcox.....	Manchester.....	12.4	8.9	3.5	"	Contains much extraneous matter.
71277	8-31-09	Patuode & Farrell.....	Burlington.....	13.2	9.2	4.0	"	" " " "
71939	9-27-09	Geo. Edgerton.....	Dorset	13.7	9.1	4.6	"	" " " "
71940	"	Rollin Sykes.....	"	14.1	9.1	5.0	"	" " sediment and hairs.
71941	"	Charles Lee.....	"	13.2	9.0	4.2	"	" " " "
71942	"	W. B. Sykes	"	14.0	9.6	4.4	"	" " " "

Total, 14.

Digitized by Google

Milk—Standard or Above

Specimens Examined at Laboratory during Third Quarter, 1909

Laboratory Number	Date	Obtained From	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
70174	7- 6-09	Mrs. Minnie Ladoe.....	Enosburg Falls...	13.9	8.9	5.0	Normal.....	No. 1.
70176	"	" " "	" " ...	13.6	9.0	4.6	"	No. 3.
70179	"	" " "	" " ...	13.2	9.4	3.8	"	No. 6.
70416	7-20-09	Steele & Butler.....	Burlington.....	12.5	8.5	4.0	"	
70417	"	C. K. Tyler.....	"	13.1	9.1	4.0	"	
70418	"	H. B Chittenden.....	"	13.7	9.1	4.6	"	
70419	"	H. S. Morgan.....	"	12.1	8.8	3.3	"	
70421	"	Rockwell & Son.....	"	12.1	8.6	3.5	"	
70422	"	J. B. Ritchie.....	"	12.7	8.7	4.0	"	T. Wheeler, producer.
70423	"	Mary Besery.....	"	12.4	9.15	3.25	"	
70424	"	E Bordo Co.....	"	12.2	8.95	3.25	"	
70425	"	T. P. Welch.....	"	13.1	8.6	4.5	"	
70428	"	I. E. Chase.....	"	12.7	8.5	4.2	"	Forsyth, producer.
70429	"	" "	"	12.6	8.9	3.7	"	Lamson, "
70430	"	Bourne Creamery Co.....	"	12.7	9.2	3.5	"	Goodrich, "
70431	"	H. Gladstone.....	"	12.7	8.9	3.8	"	
70432	"	Bostwick Bros.....	"	12.6	9.35	3.25	"	
70433	"	Wm. Suckstorff.....	"	13.2	8.8	4.4	"	Tilly, producer.
70435	"	Mrs. F. X. Saltus.....	"	12.7	8.9	3.8	"	Soule, "
70436	"	Wm. Suckstorff.....	"	13.3	9.1	4.2	"	Hutchins, "
70437	"	" "	"	12.9	9.4	3.5	"	Ray, "
70439	"	John Petros.....	"	12.7	9.0	3.7	"	T. Ryan, "
70455	"	A. Mowsowitz.....	"	13.6	9.5	4.1	"	
70506	7-22-09	H B. Chittenden.....	"	12.8	8.7	4.1	"	"Baby" Milk.
70507	"	H. A. Bixby	"	12.5	8.7	3.8	"	
70528	7-23-09	I. H. Buck	"	12.7	8.7	4.0	"	
70529	"	T. Ryan.....	"	13.4	8.8	4.6	"	
70539	"	C. H Ellis.....	"	Cream		38.0	"	
70540	"	Raine & Burt.....	"	Cream		46.0	"	Excellent quality.
70567	7-22-09	A. Geroux	Island Pond.....	13.2	8.5	4.7	"	
70568	"	Stevens Bros.....	" "	13.01	8.81	4.2	"	
70569	"	G. F. Andrews & Son	" "	13.02	8.62	4.4	"	
70570	"	P. Flaherty.....	" "	13.91	9.11	4.8	"	
70615	7-28-09	R. D. Brown.....	Manchester.....	12.5	8.7	3.8	"	
70616	"	C. R. Ames.....	"	13.2	8.6	4.6	"	
70617	"	A. F. Smith.....	"	13.5	8.5	5.0	"	
70618	"	J M. Bowen.....	"	13.5	9.3	4.2	"	
70619	"	R. H. Purdy.....	"	13.8	8.9	4.9	"	
70620	"	W. H. Benedict.....	"	13.7	8.7	5.0	"	
71126	8-21-09	William Prescott.....	Plainfield.....	13.5	9.2	4.3	"	

Digitized by Google

Milk—Standard or Above—(Continued)

Laboratory Number	Date	Obtained From	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
71297	9- 1-09	Rublee, No. 1	Windsor					Package broken and contents lost when received.
71298	"	" No. 2	"	13.7	9.7	4.0	Normal	
71276	8-31-09	J. Roland	Burlington	14.6	9.2	5.4	"	H. H. Ray, producer.
71278	"	River View Farm	"	12.6	8.9	3.7	"	
71279	"	" " "	"	13.1	9.1	4.0	"	
71286	9- 1-09	L. E. Haynes	"	13.6	9.2	4.4	"	
71287	"	" "	"	Cream		44.0		
71299	"	T. Ryan	"	14.3	8.2	6.1	Normal	Top Milk.
71300	"	H. H. Ray	"	Cream		41.0		
71317	9- 1-09	Geo Bouchard	"	13.5	9.3	4.2	Normal	H. H. Ray, producer.
71321	"	T. P. Clay	"	13.1	9.1	4.0	"	Steele & Butler, producers.
71322	"	Geo. Saiger	"	14.6	9.6	5.0	"	
71342	9- 2-09	D. J. Millham	"	13.2	9.4	3.8	"	
71432	9- 8-09	J. C. Colgate	Bennington	13.5	9.4	4.1	"	
71442	"	W. L. Tillotson	Bakersfield	14.0	9.5	4.5	"	
71464	"	G. A. Kinney	Burlington	11.9	8.5	3.4	"	
71465	"	W. J. Parker	"	12.7	8.5	4.2	"	
71466	"	E. S. Chittenden	"	13.3	8.9	4.4	"	
71533	9-13-09	E. C. Bordo	"	12.8	9.2	3.6	"	
71681	9-19-09	C. C. Bliss	"	13.8	9.2	4.6	"	
71685	9-20-09	J. Cosgriff	So. Burlington	13.8	8.9	4.9	"	
71686	"	Steele & Butler	Burlington	13.7	9.1	4.6	"	

Digitized by Google

Pasteurization of Creamery By-Products. Specimens Examined at Laboratory of Hygiene during Third Quarter, 1909

(Skim and Buttermilk)

Laboratory Number	Date	Creamery	Town	Heated to 176° F.	Not Heated to 176° F.	Remarks
70106	7- 2-09	Bristol	Bristol	.....	1	Skim milk.
70107	"	Shelburne Co-operative	Shelburne	.....	1	Buttermilk.
70108	"	" "	"	.....	1	Skim milk
70279	7-11-09	Hudson Valley	Poultney	.....	1	" "
70280	"	Wallingford	Wallingford	.....	1	" "
70281	"	Tinmouth Valley		.....	1	" "
70282	"	Wm. Schade	Rupert	.....	1	" "
70283	"	Hudson Valley	Castleton	.....	1	" "
70347	7-15-09	Cream Hill	Shoreham	.....	1	" "
70348	"	Shelburne Co-operative	Shelburne	.....	1	" "
70349	"	Lake Dunmore		.....	1	" "
70350	"	Tinmouth Valley		.....	1	" "
70363	"	Shelburne Co-operative	Shelburne	.....	1	" "
70376	7-16-09	Beaver River Association	Essex	.....	1	" "
70379	"	Donahue	"	.....	1	" "
70456	7-21-09	Wallingford		1	.....	
70457	"	North Clarendon		1	.....	
70510	7-22-09	Capital	Cavendish	1	.....	
70511	7-23-09	Shelburne		1	.....	Skim milk submitted by creamery.
70542	"	"		1	.....	Buttermilk " " "
70563	7-26-09	Hudson Valley	Poultney	1	.....	Skim milk " " " "
70564	"	" "	"	1	.....	" " " " "
70565	"	" "	"	1	.....	" "
70566	"	" "	"	1	.....	" "
70577	"	West Rutland		1	.....	" "
70638	7-29-09	Shelburne Co-operative		1	.....	Buttermilk submitted by creamery.
70639	"	" "		1	.....	Skim milk " " "
70643	"	M. F. Donahue	Essex Junction	1	.....	" " " "
70646	"	Middlebury		.....	1	Buttermilk.
70647	"	"		.....	1	Skim milk.
70648	"	Shelburne Co-operative		1	.....	" "
70649	"	" "		1	.....	" "
70650	"	Lake View	Charlotte	1	.....	" "
70717	8- 2-09	L. C. Ray	Shelburne	.....	1	" " submitted.
70718	"	"	"	.....	1	" " "
70730	8- 3-09	Middlebury		1	.....	" "
70731	"	"		1	.....	Buttermilk.
70795	8- 6-09	Franklin County	St. Albans	1	.....	"
70796	"	" "	"	1	.....	Skim milk.
70797	"	Swanton Cash		1	.....	" "

Digitized by Google

Skim and Buttermilk—(Continued)

Laboratory Number	Date	Creamery	Town	Heated to 170° F.	Not Heated to 170° F.	Remarks
70798	8- 6-09	Standard	Milton	1	.....	Buttermilk.
70815	8- 7-09	Capital	Sheldon	1	.....	Skim milk.
70841	8- 8-09	E. H. Thayer & Co	Enosburg Falls	1	.....	" "
70886	8-11-09	Marcy	Richford	1	.....	" "
70897	"	Maple Hill	East Berkshire	.....	1	" "
70904	8-12-09	H. P. Hood & Sons	Newport	1	.....	" "
70905	"	Clemila	North Troy	1	.....	Buttermilk.
71088	8-20-09	Panton Co-operative	.....	1	.....	"
71089	"	" " "	.....	1	.....	Skim milk.
71090	"	Vergennes	.....	1	.....	" "
71091	"	"	.....	1	.....	Buttermilk.
71092	"	Ferrisburg	.....	1	.....	"
71093	"	"	.....	1	.....	Skim milk.
71094	"	Lewis Creek	North Ferrisburg	1	.....	Whole milk.
71095	"	Donahue	Monkton	1	.....	Buttermilk.
71096	"	Elgin Spring	East Panton	1	.....	"
71215	8-28-09	Chace	Rupert	1	.....	Skim milk.
71309	9- 1-09	Danby	.....	1	.....	" "
				38	20	Total, 58.

Digitized by Google

SPECIMENS EXAMINED AT LABORATORY OF HYGIENE DURING THIRD QUARTER, 1909

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
70195	7- 4-09	Cream	Submitted by W. W. Hubbard, Bristol		1	..	..	Fat 29 0 per cent.
70189	7- 8-09	Milk	" H. H. Ray, Burlington.		1	..	..	
70234	7- 9-09	"	" W. J. Powers, Brandon.		..	1	..	Contains added water.
70259	7-10-09	"	" H. H. Ray, Burlington.		1	..	..	
70260	"	"	" " "		1	..	..	
70444	7-20-09	Cream	Submitted by W. S. Ball, Shelburne..		1	..	..	Fat 29.0 per cent.
70535	7-24-09	"	" Champlain Trans Co., Burlington		1	..	..	Fat 30.0 per cent.
70571	7-26-09	Milk	Submitted by P. C. Dodge, Randolph.		1	..	..	
70693	7-31-09	"	" D. N. Barr, Hartford..		1	..	..	
70694	"	"	" " "		1	..	..	
70749	8- 4-09	Cream	" W. A. Ferguson, Bristol		..	1	..	Contains much extraneous matter.
70757	8- 5-09	Milk	" H. L. Stillson, Bennington		1	..	..	
70778	"	Cream	Submitted by W. S. Ball, Shelburne..		1	..	..	Fat 29.5 per cent.
70852	8- 9-09	"	" " " "		1	..	..	
70853	"	Skim Milk	" " " "		1	..	..	
70931	8-13-09	Eden Brand Lemon Substitute	H. B. Slack, Vergennes	L. DeGroff & Son, New York	1	..	..	An imitation, as labeled.
70932	"	Health Brand Lemon Extract	" "	" " "	..	1	1	Lemon oil 4.4 per cent.
70918	"	Saratoga Lemon Extract	R. L. Kingsland, Vergennes	Saratoga Ext. and Chem. Co., Saratoga Springs	1	..	..	Lemon oil 5.7 per cent.
70935	"	Concentrated Lemon Ext. Imitation	" "	Kidder & Co., Boston	..	..	1	Not concentrated; misleading statements on label.
70936	"	Colgate's Lemon Extract	" "	Colgate & Co., New York	1	..	..	Lemon oil 7.8 per cent.
70960	"	Foss Orange Extract		Schlotterbeck & Foss Co., Portland, Me.	1	..	..	Orange oil 7.4 per cent.
70961	"	O. K. Lemon Extract	O. C. Dalrymple & Sons, Vergennes..	N. Y. Extract Co., Earlville, N. Y.	..	1	1	A colored imitation,
70965	"	Imitation Lemon Flavoring	E. C. Scott, Jr., " ..	Squires, Sherry & Galusha, Troy	1	..	..	An imitation lemon, correctly labeled.
71008	"	Butter	Submitted by Vt. Farm Mach. Co., Bellows Falls		..	..	..	Sample insufficient.
70942	"	Champion Pineapple Extract	C. S. Haven, Vergennes	N. Y. Extract Co., Earlville, N. Y.	..	..	1	A chemical imitation.
70977	"	Cotton's Artificial Pineapple Extract	J. Daniell, "	C. L. Cotton Extract and Perfume Co., Earlville, N. Y.	1	..	..	An imitation, correctly labeled.
70990	"	Silver Star Baking Powder	R. L. Kingsland, "	Canby, Ach & Canby, Dayton, O.	..	..	1	Ingredients not stated on label.

Digitized by Google

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
70960	8-13-09	Otter Brand Fish Cake	C. E. Stebbins, Vergennes	E. D. Keyes & Co., Rutland	1			
70963	"	Gorton's Codfish	O. C. Dalrymple & Son, Vergennes	Gorton-Pew Fisheries Co., Gloucester	1			
70968	"	Talisman "	E. C. Scott, Jr., "		1			
71065	8-19-09	Cream	Submitted by E. E. Kellogg, Worcester		1			
71106	8-21-09	Milk	Submitted by H. H. Ray, Burlington	W. W. Spear, Burlington	1			
71107	"	"	" " "	J. Liberty, "	1			
71108	"	"	" " "	Geo. Neser, "	1			
71109	"	"	" " "	Perigo, "	1			
71110	"	"	" " "	H. H. Wheeler, "	1			
71147	8-24-09	"	" F. Richardson, "		1			
71216	8-28-09	Cream	" E. E. Kellogg, Worcester		1			
71260	8-31-09	Skim Milk	Submitted by Paul Parot, Winooski		1			
71261	"	Cream	" " " "		1			
71341	9- 3-09	"	" E. E. Kellogg, Worcester		1			
70943	8-18-09	Jell-O Lemon	C. E. Stebbins, Vergennes	Genesee Pure Food Co., LeRoy, N. Y.	1			Color and flavor simulated as labeled.
70944	"	" Cherry	" "	" "	1			Color and flavor simulated as labeled.
70945	"	" Orange	" "	" "	1			Color and flavor simulated as labeled.
70946	"	" Strawberry	" "	" "	1			Color and flavor simulated as labeled.
71345	9- 3-09	Milk	Submitted by Dr. L. W. Peabody, Jacksonville		1			No tubercle bacilli found.
70929	8-13-09	Beaumarchand Olive Oil	H. B. Slack, Vergennes		1			
70939	"	Antoninis Olive Oil	C. S. Haven, "		1			
70960	"	Nicelle Olive Oil	J. Daniel, "	Seville Packing Co., N. Y.	1			
71433	9- 8-09	Cream B	Submitted by W. H. Valiquette, Rutland		1			Fat 40.0 per cent.
71434	"	" A	Submitted by W. H. Valiquette, Rutland		1			Fat 32.0 per cent.
71380	6- 6-09	Coffee	Submitted by F. L. Lowe, Townshend	M. L. Hall Co., Boston	1			No adulteration found.
71381	"	Cream Tartar	" " "	A. Coburn Co., Philadelphia	1			99.9 + per cent pure.
71573	9-14-09	Milk	" E. R. Rockwell, Burlington					Bacteria 2,000,000 per cc. No colostrum bodies found.

Digitized by Google

Foods (Continued)

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
70919	8-13-09	Baking Soda	R. L. Kingsland, Vergennes		1			99.9 + per cent pure.
70921	"	Gold Star Baking Powder	" "	Berry Hall Co., Burlington	1			Correctly labeled.
70923	"	" Cream Tartar	" "	" "	1			99.9 + per cent potassium bitartrate.
70924	"	La Badie Sardines	" "		1			10 fish in olive oil. Good quality.
70927	"	Orange Marmalade	" "	Logan Johnson Co., Boston	1			Contains glucose, as labeled.
70928	"	Damson Jam	" "	Curtice Bros., Rochester, N. Y.	1			No adulteration found.
70930	"	Our Special Coffee	H B. Slack, "		1			Full weight.
70933	"	Cleveland's Baking Powder	" "		1			Label in correct form.
70934	"	Peach Jam—Beechnut	" "	Beechnut Packing Co.	1			No adulteration found.
70935	"	Concord Grape Jam—Beechnut	" "	"	1			No adulteration found.
70936	"	Gold Label Sardines	" "		1			7 large fish in cottonseed oil.
70937	"	Stickney & Poor's Soda	" "	Stickney & Poor, Boston	1			99.9 + per cent pure.
70938	"	Slade's Cream Tartar	" "		1			99.9 + per cent potassium bitartrate.
70948	"	Gold Label Mayonnaise Sardines	C. E. Stebbins, "		1			12 very large fish in mustard dressing.
70949	"	Dwight's Cow Brand Soda	" "		1			Pure.
70951	"	Strawberry Jam	" "	J. Keiller & Sons, London	1			Label in correct form.
70952	"	Apple Butter—Columbia	" "	Columbia Conserve Co., Indianapolis	1			No adulteration detected.
70949	"	Cream Tartar—Slade's	" "		1			Pure.
70964	"	Breakfast Cup Coffee	E C. Scott, Jr. "	E. C. Scott, Vergennes	1			Full weight.
70940	"	Union Brand Sardines	C. S. Haven, "		1			7 large fish in cottonseed oil.
70941	"	Almond Extract	" "	C. L. Cotton, Earlville, N. Y.	1			No adulteration found.
70965	"	Sugar of Milk Baking Powder	O. C. Dalrymple & Sons, Vergennes	H. D. Thatcher, Potsdam, N. Y.	1			
70966	"	Davis' Baking Powder	" "		1			
70969	"	Union Sardines	" "	Union Sardine Co	1			7 large fish in cottonseed oil.
70970	"	Borax—20 Mule Team	" "	Pacific Coast Borax Co., N. Y.	1			Pure.
70968	"	Arm and Hammer Soda	" "	Church & Co., N. Y.	1			Pure.
70971	"	Black Diamond Borax	J. Daniel, Vergennes	Archibald & Lewis Co., N. Y.	1			Pure.
70972	"	Soda—Cow Brand	" "		1			Pure.
70973	"	Royal Baking Powder	" "		1			
70961	"	Cream Tartar—Gold Star	" "	Berry Hall Co., Burlington	1			99.9 + per cent potassium bitartrate.
70974	"	Thepure Baking Powder	" "	Thepure B. P. Co., Albany	1			Correctly labeled.
70975	"	K. C. Baking Powder	" "	Jacques Mfg. Co., Chicago	1			Correctly labeled.
70976	"	Rumford Baking Powder	" "	Rumford Chem. Co., Providence	1			Correctly labeled.
70978	"	Extract Rose	" "	C. L. Cotton, Earlville, N. Y.	1			

Digitized by Google

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
70982	8-18-09	Skipper Norwegian Sardines	J. Daniel, Vergennes	Angus Watson & Co., London	1			35 small fish in olive oil. Excellent quality
71689	9-20-09	Skim Milk	Submitted by Paul Parot, Winooski		1			Fat .185 per cent.
71690	"	Cream	" " "		1			Fat 24.0 per cent.
71750	9-21-09	"	" G. H. Branch, Grand Isle		1			Fat 21.0 per cent.
71617	9-15-09	La Rochelle Sardines in Olive Oil	Strong & Goddard, Hyde Park			1		Packed in cottonseed oil.
71614	"	M. & J. Coffee	" "	Martin L. Hall Co., Boston	1			Full weight.
71615	"	Eagle Brand Sardines	" "	No. Lubec Mfg. Co., No. Lubec, Me	1			14 fish in cottonseed oil.
71616	"	Champion Norwegian Smoked Sardines	" "	John Bradland, Stavanger, Norway	1			18 fish in olive oil. Good quality.
71618	"	Cream Tartar	" "	E. R. Durkee Co., N. Y.	1			Pure. Full weight.
71619	"	Amazon Premium Chocolate	" "	Hooton Cocoa and Choc. Co., Newark	1			Full weight.
71620	"	Our Special Essence Peppermint	" "	Schlotterbeck & Foss, Portland, Me	1			
71621	"	Silver Star Baking Powder	" "	Canby, Ach & Canby, Dayton, O	1			Available CO_2 10.12 per cent.
71622	"	Tiger Head Green Tea	" "	Delano Potter & Co., Boston	1			Full weight.
70922	8-13-09	Manilla Baking Powder	R. L. Kingsland, Vergennes		1			Available CO_2 10.14 per cent.
70962	"	Jamaica Ginger	O. C. Dalrymple & Sons, Vergennes	Schlotterbeck & Foss, Portland, Me	1			
71943	9-28-09	Milk	Submitted by G. H. Benedict, Underhill		1			
71976	9-29-09	Vinegar	Submitted by Spaulding, Kimball & Co., Burlington		1			
71986	9-27-09	Maple Syrup	Submitted by W. S. Chamberlin, Bridport		1			
71716	9-20-09	Canned Corn	H. E. Baxter & Bro., Essex Junction	H. E. Baxter & Bro.	1			
71717	"	" " "	" " "	"	1			
71868	9-24-09	Extract Lemon Peel	W. R. Warner & Co., Vergennes		1			Lemon oil .8 per cent.
71869	"	Extract Vanilla Compound	" "		1			A substitute for vanilla. Correctly labeled.
71870	"	Olive Oil – Elysee Brand	" "	J. L. Thompson & Co., Troy	1			Pure olive oil.
71871	"	Olive Oil—Creme De Lux	" "	Sasserus Picon & Maunir, Bari, Italy	1			Pure olive oil
71880	"	Extract Vanilla	Timothy Neville, Vergennes		1			
71881	"	Extract Lemon	" "		1			Lemon oil 5.1 per cent.
71882	"	Salad Oil—Deloro Brand	" "		1			Pure olive oil.
71883	"	Salad Oil—Ternay Brand	" "		1			Pure olive oil.
71979	9-29-09	Colonial Cocoa	Heyman Gladstone, Burlington	Atkinson & Co., N. Y.	1			
71980	"	Justice Brand Cocoa	" "	W. H. Baker, Syracuse	1			
71981	"	Washington Baking Powder	" "		1			Available CO_2 10.12 per cent.

Digitized by Google

Foods (Continued)

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
71982	9-20-09	Star Brand Vanilla	Heyman Gladstone, Burlington	Burlington Chemical Co., Burlington	..	1	..	A colored imitation.
71983	"	Moro Molasses	" "	Hudson Mfg. Co., N. Y.	1	..	..	
71984	"	Molasses	" "		1	..	..	
71985	"	Purity Sugar Butter	" "	E. E. Post Co., Utica, N. Y.	1	..	..	
71986	"	Acme Lemon Extract	" "	Acme Extract Co., Binghamton, N. Y.	..	1	..	An imitation containing no oil of lemon.
71987	"	Webb's Wintergreen	" "	"27-29 Hampden St., Springfield"	1	..	..	Not standard, but correctly labeled.
71988	"	Sweet Chocolate	" "	W. H. Baker, N. Y.	1	..	..	
71989	"	K. C. Baking Powder	" "	Jacques Mfg. Co., Chicago	1	..	..	
71990	"	Faneuil Tea	" "	M. L. Hall Co., Boston	1	..	..	
71991	"	Premium Chocolate	" "	W. H. Baker, Winchester, Va.	1	..	..	
71995	"	J. H. P. 50c. Tea	Max Glasston, Burlington	J. H. Pierce & Co., Boston	1	..	..	
71996	"	Vinegar	" "		1	..	..	Acetic acid 4.9 per cent.
71998	"	Hall Brand Lemon Extract	" "	Hall Ext. Co., Portland, Me	..	..	1	Label not in proper form.
72003	"	Ocean Baking Powder	J. Roland, Burlington	Ocean Mills, Montreal and Boston	..	..	1	Label not in proper form.
72004	"	Kimball's Lemon Extract	" "	Kimball Bros., Enosburg Falls	..	1	1	Does not conform to formula on label.
72006	"	Lard	" "		1	..	..	
72007	"	Acme Peanut Butter	" "	J. W. Beardsley's Sons, New York	1	..	..	
72008	"	Vanilla Sweet Chocolate	" "	W. H. Baker, Winchester, Va.	1	..	..	
72009	"	Cleveland's Baking Powder	" "		1	..	..	
72010	"	Imperial Pie Fruit—Raspberry	" "	H. C. Gutchess, Port Byron, N. Y.	1	..	..	Label in correct form.
72011	"	Cream Tartar	" "	Stickney & Poor Spice Co., N. Y.	1	..	..	Pure potassium bitartrate.
72011	"	Shawmut Apple and Raspberry	" "	J. Middleby, Jr., Boston	1	..	..	An imitation preserve, correctly labeled.
72013	"	Rainbow Sardines	" "	DeLong, Seaman & Co., Boston	1	..	..	34 excellent small fish in olive oil.
72014	"	Gold Coin Sardines	" "	Thorndyke & Hix, Rockland, Me	1	..	..	24 medium fish in cottonseed oil.
72084	"	Home Tried Lard	G. W. Chandler, Winooski		1	..	..	
72085	"	Quality Baking Powder	" "	Importers' Branch, N. Y.	1	..	..	
72086	"	Burlington Pineapple Extract	" "	Burlington Chemical Co., Burlington	..	1	1	A colored imitation.
72087	"	German Sweet Chocolate	" "	Walter Baker & Co., (Ltd)	1	..	..	
72088	"	Evaporated Cider	W. E. McBride, "	A. H. Graves, Waterbury	1	..	..	
72039	"	Extract Raspberry	" "	Schlotterbeck & Foss Co., Portland	..	..	1	Old stock.
72040	"	Staple Lemon Extract	" "		..	1	1	A colored imitation.
72041	"	Coburn's Jamaica Ginger	" "		1	..	..	
72042	"	Apple Jelly—Raspberry Flavor	" "	J. Middleby, Jr., Boston	1	..	..	Label in correct form.

Digitized by Google

Foods (Continued)

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
72043	9-29-09	Sea Pearl Sardines	W. E. McBride, Winooski		1			28 medium sized fish in olive oil.
72044	"	Monarque Sardines in Peanut Oil.	" "	"Packed in England"	1			12 medium sized fish in peanut oil.
72045	"	Preferus Peeled Sardines in Olive Oil	" "		1			12 large, peeled boneless fish in olive oil. Fine appearance and quality.
72046	"	French Olive Oil	W. B. Atwood, "	Cruikshank Bros., Allegheny, Pa.	1			Pure olive oil.
72047	"	Heinz Olive Oil	" "	H. J. Heinz Pittsburg, Pa.	1			Pure olive oil.
72048	"	Vinegar	" "		1			
72049	"	Light Molasses	" "		1			
72050	"	Sardines Fried in Oil	" "	Gorton-Pew Fisheries Co.	1			11 large fish in cottonseed oil.
72051	"	Boneless Sardines	" "	Gabriel, Triat & Co., Douarney, France	1			Excellent quality boneless fish in olive oil.
72052	"	Boudet Sardines in Olive Oil	" "	"Portugal"	1			14 fish in olive oil.
72053	"	Currant-Apple Jelly	" "	Cruikshank Bros., Allegheny, Pa.	1			
72054	"	Half Dollar Japan Tea	" "	Chase & Sanborn, Boston	1			
72055	"	German Sweet Chocolate	" "	Walter Baker & Co.	1			
72056	"	Thepure Lemon Extract	" "	McAndrews, Portland, Me.		1	1	A colored imitation.
72057	"	Baker's Lemon Extract	" "	Baker Extract Co., Springfield, Mass.	1			Good quality. Lemon oil 7.4 per cent.
72058	"	Foss Orange Extfact.	" "	Schlotterbeck & Foss Co., Portland, Me.	1			Good quality. Orange oil 7.0 per cent.
72059	"	Premier Strained Honey	" "	Francis H. Leggitt & Co., N. Y.	1			

Total..... 170.
Above standard, 153.
Below " 17.

Digitized by Google

Drugs

Specimens Examined at Laboratory of Hygiene during Third Quarter, 1909

Laboratory Number	Date	Article	Obtained from	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
70204	7- 7-09	Formalin	Submitted by C. F. Dalton, Burlington		1			Formaldehyde 38.4 per cent.
70241	7- 9-09	"	J. W. O'Sullivan, Burlington		1			" 37.6 "
70242	"	"	W. H. Lottman & Co., Burlington		1			" 38.2 "
70243	"	"	G. A. Churchill, "		1			" 39.0 "
70244	"	"	Young's Pharmacy, "		1			" 38. "
70245	"	"	W. J. Henderson, "		1			" 37.4 "
70246	"	"	R. B. Stearns Co., "		1			" 37.4 "
70247	"	"	Bellrose Pharmacy, "		1			" 38.0 "
70298	7-12-09	Greene's Syrup of Tar	M. Collins, "	Submitted by H. B. Shaw			1	Misleading statements.
70299	"	Dr. King's New Discovery	Parker's Drug Store, "	" " "	1			
70300	"	Dr. Ingham's Pain Extractor	W. P. Hall, "	" " "	1			
70301	"	Perry Davis' Pain Killer	F. L. Taft & Co., "	" " "	1			
70302	"	Dr. Kendall's Blackberry Balsam	Churchill's Pharmacy, "	" " "	1			
70303	"	Lambert's Syrup of Tar	W. J. Henderson, "	" " "	1			
70304	"	Kemp's Balsam	Halloran & Co., "	" " "			1	Contains Alcohol, not stated.
70305	"	One Minute Cough Cure	J. G. Bellrose, "	" " "			1	" " " "
70306	"	Shiloh's Catarrh Remedy	W. P. Hall, "	" " "			1	Misleading statements fictitious name.
70307	"	Phenyo-Caffein	O'Sullivan's Drug Store, "	" " "	1			
70308	"	Dr. Petit's Eye Salve	F. L. Taft & Co., "	" " "			1	Fictitious name.
70356	8-20-09	Coca Cola	G. A. Churchill, "		1			
70467	7-21-09	Dr. Shoop's Headache Tablets	College Pharmacy, "		1			
70468	"	A. D. S. Headache Wafers	" " "		1			
70469	"	Eureka Headache Cure	" " "				1	Contains acetanelid not stated
70470	"	Sherman's Headache Cure	" " "				1	" " " "
70471	"	Stearns Headache Cure	" " "		1			
70472	"	Nervease Headache Powders	" " "		1			
70473	"	Headache Powders	" " "		1			
70474	"	Pearl Headache Konseals	" " "				1	Contains acetanelid not stated
70475	"	Phenyo-Caffein	" " "		1			
70476	"	Neurol	" " "				1	" " " "
70477	"	Shaker Family Pills	" " "		1			
70478	"	Henry's Headache Powders	J. W. O'Sullivan, "				1	" " " "
70479	"	Flag Salt	" "		1			
70480	"	Dr. Kohler's Antidote	" "		1			
70481	"	Rexall Headache Powders	" "		1			
70482	"	Orangeine	" "		1			
70484	"	Garfield Headache Powders	" "				1	Contains acetanelid not stated
70485	"	Ryedale's Headache Tablets	" "					
70486	"	Matchless Headache Wafers	Bellrose Pharmacy, "		1			

Digitized by Google

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
70487	7-21-09	Brown's Laxative Pills	Bellrose Pharmacy, Burlington		1			
70488	"	Laxative Bromo-Quinine	" "		1			
70489	"	Pirso Tabloes	" "		1			
70490	"	Tangin Tablets	" "		1			
70491	"	Dr. Whitehall's Megrimine	F. L. Taft & Co., "				1	Contains acetanelid not stated
70492	"	Cafebrin Headache Cure	" "				1	" " " "
70493	"	E. M. Allen's Headache Powders	" "				1	" " " "
70494	"	Cephalgine Tablets	" "				1	" " " "
70495	"	Taft's Peerless Headache Wafers	" "		1			
70579	7-26-09	Laxative Fig Syrup	Submitted by J. F. Halloran & Co., Burlington	Henry Thayer & Co., Boston	1			
70959	8-18-09	Castor Oil, Cold Pressed	O. C. Dalrymple & Son, Vergennes	Hall Brand	1			
70578	7-26-09	Carpenter's Grip Syrup	Submitted by J. F. Halloran & Co., Burlington		1			No adulteration detected.
70954	8-18-09	Hartshorn's No. 18	O. C. Dalrymple & Son, Vergennes	E. Hartshorn, Boston	1			" " "
70955	"	Dr. J. Miller's Balsam	" "	E. Morgan & Sons, Providence, R. I.	1			Correctly labeled.
70956	"	Mrs. Dinsmore's Cough Balsam	" "	L. M. Brock & Co., Lynn, Mass.	1			" "
70957	"	Dr. Ingham's Pain Extractor	" "	H. A. Ingham Co., Vergennes	1			" "
70958	"	" " Liver Cural	" "	" " " "	1			" "
70979	"	Hartshorn's Cough Balsam	J. Daniel, "	E. Hartshorn, Boston	1			" "
71584	"	Lenord's Hamburg Corn Remover	Submitted by J. F. Halloran & Co., Burlington	Hamburg Medicine Co., Chicago	1			" "
71586	"	Hydrobromate Caffeine	Submitted by J. F. Halloran & Co., Burlington	Smith, Kleine & French, Philadelphia	1			
71872	9-24-09	Charcoal Tablets	W. R. Warner & Co., Vergennes	Eli Lily & Co., Indianapolis	1			
71873	"	Tincture Iodine	" "		1			
71877	"	Rexall Charcoal Tablets	" "	United Drug Co., New York	1			
71878	"	Charcoal and Pepsin	Timothy Neville, "	Eli Lily & Co., Indianapolis	1			
71879	"	Tincture Iodine	" "		1			
71999	9-29-09	Spirits Camphor	Max Glasston, Burlington	Burlington Drug Co., Burlington	1			U. S. P.
72002	"	Beef, Iron and Wine	" "	" " " "	1			
72005	"	" " " "	" "	Kimball Bros & Co., Enosburg Falls.	1			
71537	8-18-09	Mother Siegel's Curative Syrup	Submitted by J. F. Halloran & Co., Burlington				1	Misleading statements on label.
71538	"	Nyal's Toothache Plug	Submitted by J. F. Halloran & Co., Burlington		1			
71539	"	Dr. Jones' Liniment	Submitted by J. F. Halloran & Co., Burlington				1	Misleading statements on label.

Digitized by Google

DRUGS—(Continued)

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
71540	8-18-09	Cuticura Resolvent Pills.....	Submitted by J. F. Halloran & Co., Burlington.....	.....	1	..	..	
71876	9-24-09	20th Century Pain Cure.....	W. R. Warner, Vergennes.	E. W. Slayton & Co., Warren, Vt.....	1	..	..	
71992	9-29-09	Castoria.....	Heyman Gladstone, Burlington.....	Imperial Pharmacal Co , N. Y.....	..	..	1	Contains alcohol and not stated.
72000	"	Wild Cherry Cough Syrup.....	Max Glasston, "	Susan J Lawrence Med. Co., Burlington	..	..	1	Contains alcohol, misleading statements.
71994	"	Mortimer's Recuperateur.....	Heyman Gladstone, "	G. Mortimer & Co , Boston	1	..	..	
71998	"	Foley's Honey and Tar	" "	Foley & Co., Chicago.....	1	..	..	
72001	"	Dar-ling Oil	Max Glasston, "	Hemlock Oil Co., Derry, N. H.....	1	..	..	

Legal 58; Illegal 19; Total 77

Digitized by Google

SPECIMENS EXAMINED BY ORDER OF A SUPERIOR JUDGE OR THE ATTORNEY GENERAL FROM JULY 1, 1909, TO SEPT. 30, 1909

Laboratory Number	Date Received	Date Reported	Town	Material	Examined For	Result	Ordered by	State's Attorney
			Caledonia County					
70755	8- 4-09	8- 6-09	South Walden	Autopsy	Cause of death	Rupture of Aorta	Sargent	R. W. Simonds
70756	"	"	"	Heart	"	"	"	"
			Chittenden County					
70214	7- 7-09	7- 9-09	Burlington	Autopsy	Cause of death	Case pending in court	Sargent	H. B. Shaw
70215	"	"	"	Lungs	"	"	"	"
70216	"	"	"	Stomach	"	"	"	"
70217	"	"	"	Third left rib	Fracture	"	"	"
70218	"	"	"	Piece of mesentery	Tuberculosis	"	"	"
70219	"	"	"	Kidneys	Diseased condition	"	"	"
71198	8-23-09	9- 7-09	Hinesburgh	Stomach of dog	Poison	Case pending	"	"
			Franklin County					
70589	7-27-09	7-28-09	St. Albans	Beer	Per cent. of alcohol	Case pending in court	A. A. Hall	Elmer Johnson
70590	"	"	"	Great American Hop Ale	" " "	" " "	"	"
70591	"	"	"	Ginger Ale	" " "	" " "	"	"
70592	"	"	"	Beer	" " "	" " "	"	"
70593	"	"	"	"	" " "	" " "	"	"
70594	"	"	"	"	" " "	" " "	"	"
70595	"	"	"	"	" " "	" " "	"	"
71562	9-14-09	9-26-09	Fairfield	Autopsy	Evidence of poison	Negative	Sargent	"
71563	"	"	"	Intestinal tract	Poison	"	"	"
71564	"	"	"	Liver	"	"	"	"
71565	"	"	"	Stomach and spleen	"	"	"	"
71566	"	"	"	Kidneys	"	"	"	"
71567	"	"	"	Brain	"	"	"	"
			Rutland County					
71227	8-28-09	8-30-09	Danby	Autopsy	Cause of death	Asphyxia	Sargent	J. C. Jones
71228	"	"	"	Kidneys	Pathological structure	Engorged	"	"
71229	"	"	"	Heart	" "	Normal	"	"
71230	"	"	"	Stomach and Intestines	Alcohol	Positive	"	"
71231	"	"	"	Cloth from mattress	Blood	"	"	"
71232	"	"	"	Whiskey	Alcoholic content	Case pending in court	"	"
71233	"	"	"	Empty whiskey bottle	Identification	" " " "	"	"
71234	"	"	"	Urine	Alcohol	Positive	"	"
71235	"	"	"	Section of liver	Structure	Fatty metamorphosis	"	"
71950	9-27-09	9-29-09	Fairhaven	Autopsy	Cause of death	Case pending	"	"
71951	"	"	"	Brain	" " "	" "	"	"
71952	"	"	"	Head	" " "	" "	"	"
71953	"	"	"	Lungs	" " "	" "	"	"

Digitized by Google

Medico-Legal Cases—(Continued)

Laboratory Number	Date Received	Date Reported	Town	Material	Examined for	Result	Ordered by	State's Attorney
			Washington County					
70810	7- 7-09	7- 9-09	Waterbury	Autopsy	Cause of death	Case pending	Sargent	Benj. Gates
70585	7-26-09	7-27-09	Barre	"	" " "	Case pending in court	"	"
70586	"	"	"	Liver	" " "	" " " "	"	"
70587	"	"	"	Heart	" " "	" " " "	"	"
70588	"	"	"	Bullet	" " "	" " " "	"	"
			Windham County					
71295	9- 1-09	9- 2-09	Bellows Falls	Fish spear	Blood	Case pending in court	Sargent	C. H. Williams
			Windsor County					
70862	8- 9-09	8-11-09	Hartford	Autopsy	Cause of death	Case pending	Sargent	E. R. Buck
70863	"	"	"	Uterus and adnexa	" " "	" "	"	"
70864	"	"	"	Culture from spleen	" " "	" "	"	"
70865	"	"	"	" " vena cava	" " "	" "	"	"
70866	"	"	"	" " med. sinus	" " "	" "	"	"

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

Vol. X. No. 2.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

The United States Bureau of the Census has issued its first bulletin prepared upon the annual returns of deaths from the registration area. The Bulletin, Number 104, is entitled "Mortality Statistics 1908," and is designed to precede and abstract the lengthier annual report on mortality.

For the first time the figures for the registration area consider more than one half the population. The registration area in 1908 contained 51.8 per cent of the entire population of the country. Ohio has been added since, making the percentage 55.2. Before the taking of the census in 1910 several more states and cities will be added.

Among the principal causes of death were the following, with their rate per 100,000 of population for 1908 and 1907:

	1908	1907
Tuberculosis (all forms)	173.9	183.6
Pneumonia (all forms)	136.0	161.2
Heart disease	133.3	141.7
Diarrhœa and enteritis	116.0	116.7
Brights disease	87.1	94.6
Cancer	74.3	73.1
Typhoid fever	25.3	30.3
Diphtheria and croup	22.3	24.3

In the registration area of the United States during the year 1908, 30.9 out of every 100 deaths of occupied males who died between the ages of twenty-five and thirty-four years were caused by tuberculosis of the lungs, or nearly one death out of every three. During the same age period, 41.9 per cent of the bookkeepers, clerks and copyists, 40.1 per cent of the barbers and hairdressers, 40.9 per cent of the servants, 44.1 per cent of the

Digitized by Google

boot and shoe makers, 49.2 per cent of the compositors, printers and pressmen, 41.2 per cent of the tailors, and 25.6 per cent of the farmers who died in the registration area were victims of pulmonary tuberculosis.

The same causes of death in Vermont were as follows:

	1907. No. of deaths.	Rate per 100,000 population.
Tuberculosis (all forms)	463	132.3
Pneumonia (all forms)	682	194.8
Heart disease	581	166.0
Diarrhœa and enteritis	236	67.4
Brights disease	353	100.9
Cancer	337	96.3
Typhoid fever	38	10.9
Diphtheria and croup	33	9.4

The Conference on Prevention of Infant Mortality of the American Academy of Medicine was held at New Haven, November 11 and 12.

This conference was attended by about two hundred physicians, sanitarians, persons engaged in the work of social betterment. Dr. J. H. Mason Knox of Johns Hopkins Medical School presided. Many interesting and helpful papers were presented. At the conclusion the following was adopted:

"The task of preventing infant mortality is second to none in importance and should engage the best attention and effort of all individuals, lay and professional, and of every commonwealth and community. As looking toward the attainment of such prevention the American Academy of Medicine records its convictions in the following resolutions:

"First: Resolved that the present high rate of infant mortality is due to inherited debility or disease, improper environment and care, improper feeding, and communicable diseases, and is to a high degree preventable.

"Second: Resolved that the breast-feeding of infants is, when possible, the only proper method, and that artificial feeding should never be substituted as a matter of choice.

"Third: Resolved that the reporting of all communicable diseases, especially of those commonest in society, to health boards, should be compulsory.

"Fourth: Resolved that the scientific instruction of the young in practical hygiene and sanitation and of mothers in the care and rearing of infants is an important duty resting chiefly on physicians, sociologists, school authorities, and boards of health."

Digitized by Google

1 / 4.0 979
V 2 f

UNIV. OF MICH.
MAR 17 1910

Bulletin No. 3, Volume X.

Issued Quarterly By

Vermont State Board of Health,

March 1, 1910.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS.

News Items 2
The Influence of Pure Water and Air Upon the Health of Communities, by George M. Kober, M. D., LL. D., Professor of Hygiene, School of Medicine, Georgetown University, Washington, D. C... 3
Observations from the Daily Work of a Milk Inspector, by J. O. Jordan, Ph. G., Milk Inspector, Boston, Mass..... 18
Legal Points in Health Work, by Hon. Robert A. Lawrence..... 37
Specimens Examined at Laboratory of Hygiene, Fourth Quarter, October, November and December, 1909..... 50

BRATTLEBORO, VT.

1910.

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

Vol. X. No. 3.

Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Sec. 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

NEWS ITEMS.

Town Clerks.—Your attention is called to Section 3286 of the Public Statutes. Prompt returns are desired. In cases of birth, if the name of the child is not returned as required by the Statute, call attention of parents to Sections of Public Statutes 3292 to 3296. If immediate returns are not made, refer the matter to the state's attorney for your county.

Physicians should make themselves familiar with the statutes requiring them to make returns of births. Complaints from town clerks are frequently made that the doctor does not make returns as the law requires. Write plainly with best black ink, as your certificate remains in your town clerk's office as a permanent record.

Corsets.

An anti-corset decree has been issued by the Minister of Education in Saxony, who believes tight lacing to be fatal to intellectual development, and no girl wearing a corset may attend the public educational institutions.

To Owners of Public Buildings.

The last legislature passed an Act defining Public Buildings and requiring such buildings to conform to regulations of the State Board of Health, relative to fire escapes. In conformity to this duty imposed upon the Board, they have required local health officers to notify the owners or agents of such buildings to equip them with fire escapes as provided in rules of the Board. Local health officers are provided with copies of such regulations, from whom they can be obtained, or from the Secretary of the Board. The law must be complied with.

Digitized by Google

THE INFLUENCE OF PURE WATER AND AIR UPON THE HEALTH OF COMMUNITIES.

By George M. Kober, M. D., LL. D., Professor of Hygiene, School of Medicine, Georgetown University, Washington, D. C.

Professor Finkelnburg of Bonn estimated some years ago that the average length of human life in the sixteenth century was only between eighteen and twenty years; at the close of the eighteenth century it was a little over thirty years, while to-day it varies in different countries from less than twenty-five to more than fifty years. Longevity goes hand in hand with improved sanitation; indeed the span of life since 1880 has been lengthened in civilized countries fully six years. No two factors have contributed so much to the general results as the improvement of the air we breathe and the water we drink. We have ample evidence that with the introduction of public water supplies and sewers the general mortality in numerous cities during the past fifty years has been reduced fully one-half, the good effects being especially shown by a marked decrease in the number of deaths from typhoid fever, diarrhœal diseases, and consumption. The vital statistics of Great Britain furnish the proof,* and our experience with German and American cities confirms this conclusion.

The death-rate in the city of Berlin has been reduced from 32.9 in 1875 to 16.4 in 1904; in Munich, from 41.6 in 1871 to 18 in 1906, and in Washington from 28.08 in 1875 to 19.25 in 1907.

The death-rate in the city of New York in 1804 was 28 per 1,000; from 1850 to 1854 it was 38 per 1,000; while in 1906 in spite of the density of population it was 18.9 per 1,000, practically a reduction of 50 per cent,

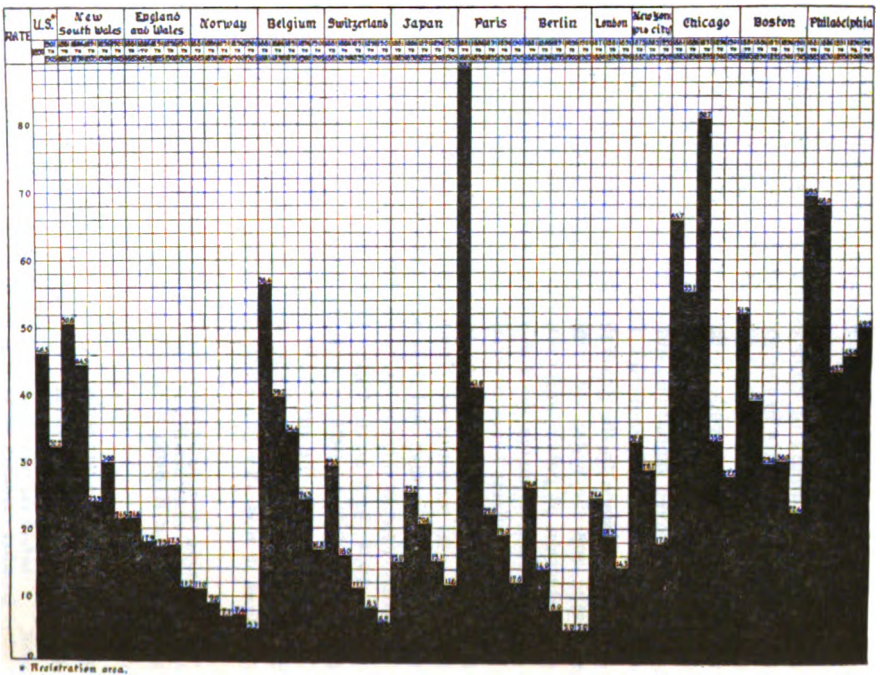
*The following table shows the death rate from certain diseases per 10,000 of population in English cities before and after the introduction of sanitary works (see Cameron, A Manual of Hygiene, 1874, p. 129).

		Typhoid Fever.	Diarrhœa.	Consumption.
Bristol,	before sanitary works	10.0	10.5	31.0
"	after sanitary works	6.5	8.1	25.5
Leicester,	before sanitary works	14.7	16.0	43.3
"	after sanitary works	7.7	19.3	29.3
Cardiff,	before sanitary works	17.5	17.2	34.7
"	after sanitary works	10.5	4.5	28.6
Macclesfield,	before sanitary works	14.2	11.0	51.5
"	after sanitary works	8.5	9.0	35.3
Warwick,	before sanitary works	19.0	5.7	40.0
"	after sanitary works	9.0	8.0	32.3
Stratford,	before sanitary works	12.5	11.2	26.6
"	after sanitary works	4.0	5.7	26.5
Ashby,	before sanitary works	13.3	4.0	25.5
"	after sanitary works	5.7	8.3	31.3
Dover,	before sanitary works	14.0	9.5	26.5
"	after sanitary works	9.0	7.0	21.2
Croydon,	before sanitary works	15.0	10.0	....
"	after sanitary works	5.5	7.0	....

Digitized by Google

TYPHOID FEVER

DEATH RATE PER 100,000 OF POPULATION



* Registration area.

Digitized by Google

which according to Walter F. Wilcox* of Cornell University, means a saving of something like 46,000 lives each year in that city alone.

The mortality in the registration area in the United States has been reduced since 1890 from 19.6 to 16.2 per 1,000 in 1905, which means a saving of over 290,000 lives a year.

It has long since been known that rivers are always purer near their source; the amount of impurities increases as we descend the stream, since the water courses are the natural drainage channels of the country and the wastes of human life and occupations find their way into the streams. It is also well known that our large American rivers are the sewers and at the same time the source of water supply for nearly all the cities located on their banks. These cities show, moreover, a marked prevalence of typhoid fever, thus confirming what has been observed over and over again, that this disease, as also cholera, dysentery and diarrhœal diseases can be carried from one town or city to another by means of inland waterways. Indeed the question is one of extreme interest even to the residents along the Great Lakes; we know that large cities like Buffalo, Erie, Cleveland, Detroit and Milwaukee discharge their sewage into the Lakes, and we also know how Chicago and Cleveland suffered from typhoid-fever visitations by contaminating their own water supplies. It is also a well-known fact that many of the river cities were obliged to resort to purification of their water supplies in order to arrest the ever increasing typhoid-fever wave.

INFLUENCE OF WATER SUPPLIES UPON TYPHOID-FEVER DEATH RATES.

For the purpose of determining the influence of public water supplies on the typhoid-fever death-rates in general, Mr. M. O. Leighton, chief of the Water Resources Branch of the United States Geological Survey, very courteously complied with my request for a list of the principal American cities with a population of over 30,000, classified according to their water supply. Dr. Cressy L. Wilbur, chief Statistician of Vital Statistics, Bureau of the Census, with equal promptness and accuracy has computed the mean rate (not the average annual rate, which, however, differs only slightly for the five years 1902 to 1906), and has arranged them in the diagram, Chart I. The statistics in spite of the many factors concerned in the dissemination of typhoid fever conclusively show that the water supply plays the most important rôle in the spread of the disease. A summary of the typhoid-fever death-rate is here given:

MEAN TYPHOID FEVER DEATH RATE FROM 1902 TO 1906 PER 100,000 OF POPULATION.

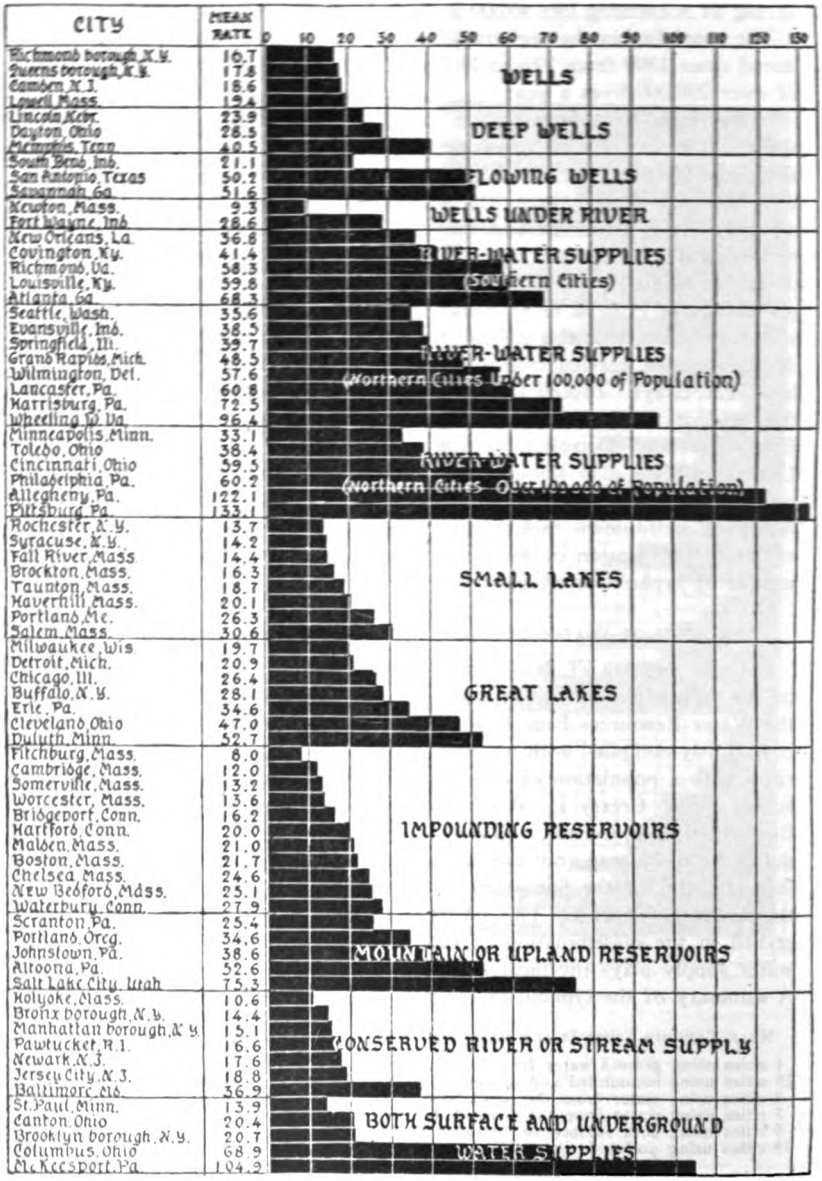
4 cities using ground water from large wells	18.1
18 cities using impounded and conserved rivers or streams	18.5
8 cities using water from the small lakes	19.3
7 cities using water from the Great Lakes	32.8
5 cities using both surface and underground water	45.7
19 cities using polluted river water	61.1

*Monthly Bulletin, New York State Department of Health, March, 1908.

Digitized by Google

TYPHOID FEVER: 1902 to 1906

DEATH RATE PER 100,000 OF POPULATION



THE HORNER PETERS CO., WASHINGTON, D. C.

Digitized by Google

The rates for cities using unpurified river water fluctuate from 33.1 at Minneapolis, to 122.1 at Allegheny and even 133.1 at Pittsburg.

GENERAL MOVEMENT OF TYPHOID FEVER.

Chart II. illustrates the general movement of typhoid fever in different countries and cities, showing percentage of decrease from first to last period shown. The period covered by Dr. Wilbur is (as nearly as convenient) the last quarter of a century, and the rates are usually given for the successive five-year periods, beginning with 1881. The table shows that during the last twenty-five years the death-rate from typhoid fever has fallen in those fourteen countries and cities from an average of 42.3 to 18.1 per 100,000, a reduction of 54.3 per cent. A more striking reduction could have been made, if statistics going back as far as 1870 had been included. The typhoid rate in Berlin in 1872, at a time when that city was riddled with cesspools and supplied with polluted water, was as high as 142 per 100,000. On account of the incomplete mortality returns everywhere prior to 1881, we have deemed it best to exclude all older foreign statistics, and for similar reasons Dr. Wilbur begins his statistics for the United States with 1890.* We have likewise excluded Mr. Whipple's statistics, which tend to show that the death-rate from typhoid fever in twelve states, including all of the New England States, New York, New Jersey, Maryland, California, Minnesota and Michigan, has fallen from 55 in 1880 to 21 per 100,000 in 1905.

THE HYGIENIC VALUE OF PURE WATER: ANNUAL COST OF TYPHOID FEVER IN THE UNITED STATES.

According to the census of 1900 there were 35,379 deaths from typhoid fever during the census year throughout the United States; and based on an estimated mortality of ten per cent it is within reason to assume a yearly prevalence of 353,790 cases of this disease. If we calculate the average cost for care, treatment and loss of work to be $300 and the average value of a human life at $5,000, we have a total loss in the United States of $283,032,000 from one of the so-called preventable diseases. Mr. George C. Whipple† presents some striking evidence to indicate that a

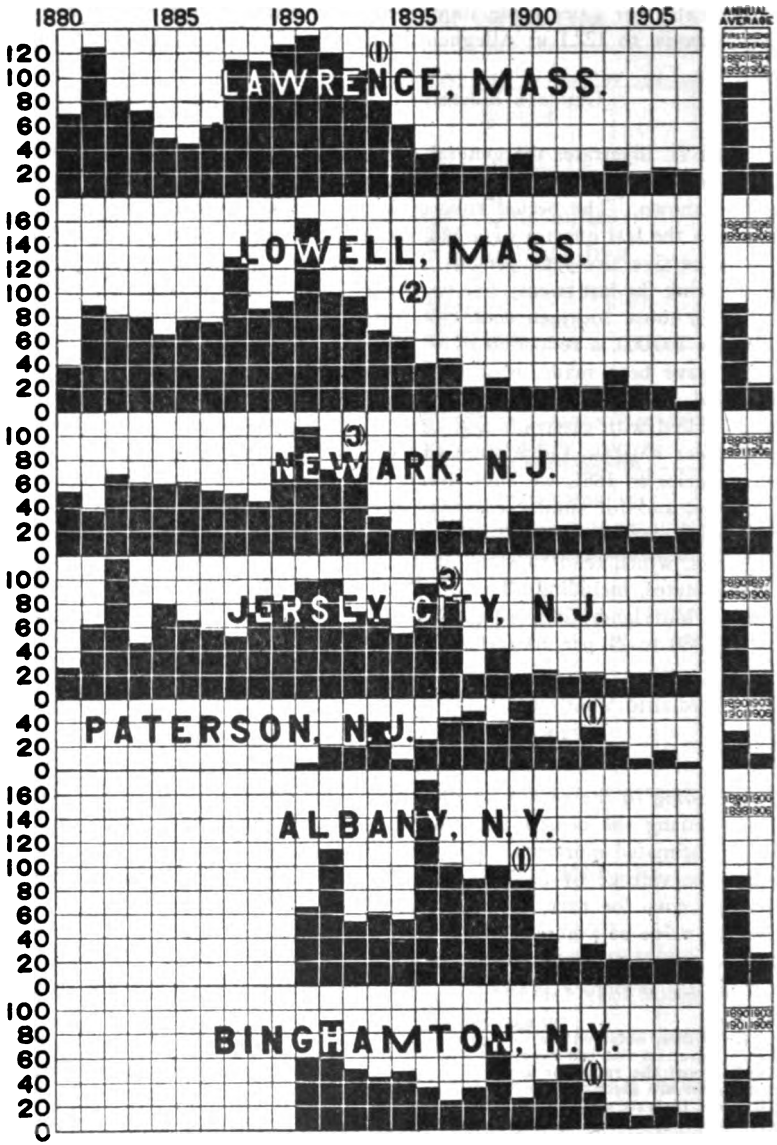
*Dr. Wilbur obtained the foreign statistics from data compiled from the International figures given in the last report of the Registrar General of England and Wales, from which report the rates for London are also taken. The rates for the cities of Paris and Berlin are given in the "Annuaire Statistique" of the city of Paris for the year 1904, and the rate of Berlin for the period 1901-1905 was supplied by Dr. Wilbur from data in his office. Dr. Wilbur laments the fact that "it is even now difficult to obtain a satisfactory statement of the number of deaths from such an important disease as typhoid fever in certain foreign countries and the difficulty of securing comparative data increases as we go back. The disease was first accurately compiled by the Registrar of England in 1869."

†The Value of Pure Water, New York, 1905, p. 5.

Digitized by Google

TYPHOID FEVER

DEATH RATES PER 100,000 OF POPULATION



CHANGE IN WATER SUPPLY

1 - FROM UNFILTERED RIVER SUPPLY TO FILTERED RIVER SUPPLY
2 - FROM UNFILTERED RIVER SUPPLY TO WELLS
3 - FROM POLLUTED RIVER SUPPLY TO CONSERVED RIVER SUPPLY

THE HORSLE PETERS CO., WASHINGTON, D. C.

Digitized by Google

loss of $10,000 for every death from typhoid fever is a conservative estimate, in which case the decrease in the "vital assets" during the census year of 1900, would amount to $353,790,000. Reduce the prevalence of the disease one half (which has been accomplished in Europe and our own country), and the question of the hygienic value of pure water will be answered from an economic point of view.

THE EFFECT OF IMPROVED WATER SUPPLY ON TYPHOID-FEVER DEATH RATES.

Chart III. shows clearly the effect of change in water supply on typhoid-fever death-rates in seven American cities. Dr. Wilbur of the Bureau of the Census has given the death-rate for a considerable time before and after the date of change and also the average annual death-rate before and after purification, and the percentage of reduction. From this table we learn that the combined average annual death-rate from typhoid fever in cities with a contaminated supply was 69.4 and after the substitution of a pure supply it fell to 19.8 per 100,000; a reduction of 70.5 per cent.

The Bulletin for the month of April, 1908, of the New York State Department of Health contains an interesting article showing that the death-rate from typhoid fever in ten cities of that state has been reduced 53.4 per cent by improved water supplies.

It may be urged that improved methods of medical treatment are responsible for a considerable reduction in the death-rates from typhoid fever, but when we see such a striking change immediately after the installation of filtration plants as in the case of the American cities shown in Chart III. and also more recently in Cincinnati and Philadelphia, we are forced to the conclusion that water purification plays the most important rôle by diminishing primarily the number of cases. It should be stated, however, that the effects are still more marked when combined with a good system of sewerage. The history of every sewered town shows a lessening of the typhoid death-rate and that the typhoid rate is always higher in sections of the same city supplied with makeshifts. The writer in 1895 pointed out that typhoid fever prevailed in Washington in one of 81 houses supplied with privies, and only one in 149 of those connected with sewers, and offered as the only reasonable explanation, that the sewers carry away the filth and germs that otherwise would contaminate the soil and ground water, but even if there were no wells these makeshifts are still a source of danger in so far as they favor the transmission of the infection by means of flies,* nor can the possibility be ignored that the germs in leaky or overflowing boxes may reach the upper layer of the soil and with pulverized dust gain access to the system.

The writer believes that about 80 per cent of the cases of typhoid fever

*The agency of flies in the transmission of typhoid-fever germs was first pointed out by Dr. Kober in the Report of the Health Officer of the District of Columbia in 1895.

Digitized by Google

are water- and milk-borne and about 20 per cent may be spread through the agency of flies, personal contact, the consumption of raw oysters and shellfish raised in sewage-polluted waters, or the eating of strawberries, radishes, celery, lettuce and other vegetables and fruits which have been contaminated with infected night soil.

OTHER WATER-BORNE DISEASES.

What has been said of typhoid fever is equally true of other water-borne diseases like cholera, dysentery, cholera morbus, diarrhœal diseases and the transmission of the eggs of intestinal and other parasites, because the germs or eggs of these diseases are present in the intestinal tract and presumably also in sewage-contaminated water. Mr. Allen Hazen,* one of the most distinguished experts on water purification in America, has conclusively shown that as the result of filtration plants in five cities supplied previously with an impure water, there was not only a reduction of 81 per cent in the deaths from typhoid fever, but also a marked reduction in the general death-rate. His computations clearly indicate that where one death from typhoid fever has been avoided by the use of a better water, a certain number of deaths, probably two or three, from other causes have been avoided. The truth of Hazen's theorem has recently been confirmed by Professor Sedgwick. It is a difficult matter to explain how water is connected with the deaths other than those from water-borne diseases, yet when we consider that water enters into the composition of the human body to the extent of 60 per cent, we are in a position to appreciate the sanitary acumen of Aristotle when he wrote in his Politica: "The greatest influence on health is exerted by those things which we most freely and frequently require for our existence, and this is especially true of water and air."

The importance of the subject is generally appreciated and the North American Conservation Conference on February 23, 1909, in the declaration of principles adopted the following, in reference to Public Health:

"Believing that the conservation movement tends strongly to develop national efficiency in the highest possible degree in our respective countries, we recognize that to accomplish such an object with success, the maintenance and improvement of public health is a first essential.

---

*See paper read at the International Engineers' Congress at St. Louis in 1904. Mr. Hazen found in five cities where the water supply had been radically improved:

	Per 100,000
A reduction in total death-rate with the introduction of a pure water supply,	440
Normal reduction due to general improved sanitary conditions, computed from average of cities similarly situated, but with no radical change in water supply	137
Difference being decrease in death-rate attributable to change in water supply	303
Of this, the reduction to deaths from typhoid fever was	71
Leaving deaths from other causes attributable to change in water supply	232

Digitized by Google

"In all steps for the utilization of natural resources consideration of public health should always be kept in view.

"Facts which cannot be questioned demonstrate that immediate action is necessary to prevent further pollution, mainly by sewage, of the lakes, rivers and streams throughout North America. Such pollution, aside from the enormous loss in fertilizing elements entailed thereby, is an immediate and continuous danger to public health, to the health of animals, and when caused by certain chemical agents, to agriculture. Therefore we recommend that preventive legislation be enacted."

Having studied the effects of pure water supplies upon mortality rates, let us next consider the influence of pure air, removal of dampness and general sanitation upon the movement of tuberculosis.

THE INFLUENCE OF SEWERS IN THE PREVALENCE OF TUBERCULOSIS.

The records of the Health Office of the City of Washington show that during the past thirty years 14.5 per cent of all the deaths occurring in the District of Columbia have been caused by pulmonary tuberculosis. The death-rate, however, has gradually and constantly fallen from 440 per 100,000 in 1880 to 210 in 1907. The death-rate from this disease in New York City has fallen in like manner from 355.6 to 271. In the United States at large from 326.2 in 1880 to 183.6 in 1907. In England and Wales from 348.7 in 1850 to 172.2 in 1906, and in Massachusetts during the same period from 469.2 to 218.3. In your own state, Vermont, the rate has fallen from 848 in 1857 to 425 in 1909. These reductions began long before the combat of the disease was a subject for popular education. The question naturally arises, if these reductions have resulted independent of any attempt to control the source of infections, what are the chief factors concerned in bringing about this gratifying result? In considering the question, I know of no sanitary reforms which could have exerted a greater influence upon our general well-being than the introduction of sewers, improved water supplies and the erection of sanitary homes. The marked reduction in the prevalence of consumption after the introduction of sewers observed in England over forty years ago, and also in the cities of Washington and New York and the country at large, may to a great extent be attributed to the prevention of air pollution and dampness. It is noteworthy that while the reduction in Washington coincident with the introduction of sewers amounts to 37.3 per cent the reduction in Baltimore, an unsewered city, is only 24.7 per cent. It has been estimated by Erismann that a cesspool with 18 cm. contents is capable of polluting the atmosphere in the course of 24 hours with 18.79 cm. of impure gases composed of carbonic acid, ammonia, sulphuretted and carburetted hydrogen and volatile fatty acids. In view of this fact, it requires no great stretch of the imagination to calculate the amount of air pollution

Digitized by Google

which resulted from the 30,000 cesspools and other makeshifts prior to the introduction of the sewerage system in the City of Washington. The influence of impure air upon our physical well-being and the power of resistance cannot be underrated. As a matter of fact, individuals who contract tuberculosis in cities often arrest the disease by removal to the country, showing that an abundance of pure air is a very important factor in the treatment of the disease, simply because it promotes oxygenation of the blood, stimulates the appetite and nutrition and thereby increases the general resisting power of the system. There can be no doubt as to the curative virtues of pure air, and hence we ought not to underrate its preventive properties.

The observations of Dr. Bowditch, of Boston, as early as 1862, clearly indicate that there is a relation between dampness of soil and pulmonary consumption, and Dr. George Buchanan, the medical officer of the privy council of Great Britain in 1867, supplied ample statistical proof that consumption became less frequent in certain towns after they had been sewered, and the soil consequently drained. In towns like Worthing, Rugby and Salisbury the deaths from consumption were reduced by 36 to 49 per cent. It is true that such a marked reduction did not always follow, but in these instances it may be fairly assumed that the soil was previously quite dry and could not be materially affected by increased drainage.

The importance of a dry, healthful building site was appreciated by Hippocrates, since he, as well as Vitruvius, the father of architecture, referred in their writings to elevation as a desirable factor. One of the most striking illustrations of damp habitations as a predisposing cause to consumption has been recorded by Nowak, in the case of a prison in the vicinity of Vienna, containing on an average 200 inmates. Every convict is examined before his transport, and if found affected with incipient tuberculosis he is sent elsewhere. In spite of this precaution the deaths number about 50 per annum and the majority die from consumption. The prisoners are better fed in this institution than elsewhere, but the building rests on a wet soil, the walls reeking with moisture, and the rooms smell musty.

The relation of dampness to consumption may be explained as follows: Dampness of soil, unless special precautions have been taken, extends by capillary attraction to the walls and renders the entire house damp. Damp air abstracts an undue amount of animal heat, lowers the power of resistance of the inmates and predisposes to catarrhal affections, and these in turn render the mucous membranes more vulnerable to the invasion of the tubercle bacilli. There is also a reason for believing that the tubercle bacilli retain their vitality for greater length of time in such an atmosphere on account of its humidity and excess of organic matter.

At all events it has long been known that tuberculosis is far more

Digitized by Google

prevalent in damp, dark and unsanitary houses. The children are anæmic and as puny as plants raised without the stimulating effects of sunlight. The death-rate is often double and treble that of other localities. While there are doubtless other factors which determine the frightful mortality, none are more potent than dampness, deficient sunlight and ventilation. The tubercle bacillus clinging to floors and walls in carelessly expectorated sputum or droplets would be destroyed by a few hours' exposure to sunlight, but finds in damp and dark basements, back-to-back houses, and yards and alley tenements, suitable environments for its vitality and growth, and the other unsanitary factors alluded to, together with the more intimate contact, materially increase the chances of infection.

If it should appear from the foregoing that the writer believes in the ubiquity of the tubercle bacillus and that the question of environment should receive first and foremost consideration, he desires to be understood that he is convinced from the splendid labors of Prof. Carl Fluegge that the tubercle bacillus is not ubiquitous, and hence the task of stamping out the primary sources of infection is by no means a hopeless one.

He believes, however, that until this is accomplished in this disease as in other infectious diseases due attention should be given to all the causes likely to influence their spread, so that in our efforts to combat tuberculosis they may receive proper consideration.

We can scarcely do better than to conclude our review with the following quotation from the report of the Conservation Commission, which is now in the hands of the Public Printer:

"Since the greatest of our national assets is the health and vigor of the American people, our efficiency must depend on national vitality even more than on the resources of the minerals, lands, forests and waters. The average length of human life in different countries varies from less than 25 to more than 50 years. This span of life is increasing wherever sanitary science and preventive medicine are applied. It may be greatly extended. Our annual mortality from tuberculosis is about 150,000. Stopping three-fourths of the loss of life from this cause and from typhoid and other prevalent diseases would increase our average length of life fifteen years. There are constantly about 3,000,000 persons seriously ill in the United States, of whom 500,000 are consumptives. More than half this illness is preventable. If we count the value of each life lost at only $1,700, and reckon the average earning lost by illness at $700 a year for grown men, we find that the economic gain from mitigation of preventable disease in the United States would exceed $1,500,000,000 a year. This gain, or the lengthening and strengthening of life which it measures, can be had through medical investigation and practice, school and factory hygiene, restriction of labor by women and children, the education of the people in both public and private hygiene, and through improving the efficiency of our health service, municipal, State and national."

Digitized by Google

DISCUSSION.

Dr. G. F. B. Willard, Vergennes, Vermont.

I know by the appearance of the audience that you have appreciated the Doctor's paper as much as I have. He has told of the diminution of typhoid fever, which is very gratifying, and incidentally mentioned the fact that the death-rate among children under five years of age was much greater where the water supply was not pure than where it was pure. He also mentioned the fact of the cost to the nation of so many deaths simply from impure water. The Doctor has shown very nicely that where we get pure water, we have a very great diminution in our death-rate. It is almost incredible. The death-rate from typhoid fever in Albany four years before they installed their filter plant was 104, and during the four years after only 26. Thus you will see it was just one-fourth, and the reduction three-fourths. During the same period the diarrhœal diseases were reduced from 125 to 53, and the deaths among children under five years of age reduced one-half. Take, for instance, the $10,000 each individual represents, or reduce it even one-half, and considering the wealth of the nation alone, it is obligatory that we have pure water supplies.

I don't know why Dr. Holton asked me to discuss this paper unless it is because the conditions at Vergennes are the same as we have heard discussed here to-day. We have not had any typhoid fever during the last year, but we stand ready for any quantity of it. I would not drink a glass of water any more than I would a glass of carbolic acid or any other poison.

It is not necessary for me to take up any of your time in going over statistics, for you have doubtless all such material at your command. The question of pure water is one that should interest every one of us. We are liable to have an epidemic of typhoid fever in our own cities at any time; if there is but one well in a town, it is liable to get infected; so there is danger all the time and we should ever be on the watch. Keep sewage out of the water supply or change the supply itself when once infected.

We have heard a very interesting talk on the value of pure air to the consumptive. I have noticed that people in my vicinity are sleeping with their windows open now, where a few years ago they would not listen to you regarding the value of pure air during the sleeping hours. My friend from Brandon could probably tell you of many families where he cannot get them to open their windows. There are some who will close their windows as soon as they start their fires in the fall and those windows are not opened again until spring. Try as hard as you can, it is impossible to convince some people of the danger that is lurking behind the closed windows. We should all emphasize the necessity of pure air in order to keep the vitality of our patients up to a level where they will be able to resist the germs of pneumonia and tuberculosis. I feel toward tuberculosis

Digitized by Google

much the same as I do toward the drink habit. Let the stuff alone. Save those who have not abused their bodies by drinking impure water and breathing impure air, and then you will see a great diminution in our death-rate.

I am sure this subject has been presented to us in a way that will enable us to retain many points of value and interest, and when we go home we should all work for pure air and pure water, knowing that we are doing one of the greatest things that we can for the benefit of the communities in which we live.

Mr. H. L. Stillson, Bennington, Vermont.

I simply rise to express my pleasure in listening to the speaker of the evening and to express my approval of the remarks made by the gentleman from Ohio. If I had the time, I should like very much to put into print my opinion. I am a writer and not a speaker, consequently I am not able to make a very good speech off-hand. Sometimes experience does a fellow good and sometimes we profit by the experience of a brother. I live in one of the largest towns of the state, where the death-rate is two in a thousand. If the deaths among the soldiers at the Old Soldiers' Home were omitted from our town list, the percentage would be considerably lower. The water system was put into our town about 1885 or 1886. As the trench was laid diphtheria followed, and we had as many as three hundred cases in a season. There was no antitoxin at the time, and I remember of carrying out entire families of children. Following close on this we had typhoid fever, two deaths out of every three being from typhoid. That has been entirely eliminated as the years have passed by. I know of only four cases of typhoid reported so far this year. Last year there were seven. I know where all but one were contracted, and it was not in the town of Bennington. People working out of town were taken sick and would return to their homes in Bennington. Our water system is watched very closely. In addition to the watershed, we have one of the lakes. Around the banks of this lake were a lot of campers. I heard there were quite a number of invalids camping out there, so I immediately made an inspection and found such to be the case. I explained what the result would be if a case of typhoid fever should occur among any of these campers and I soon got this trouble overcome. As to tuberculosis, we have had as high as 27 deaths in a year among the 9,000 inhabitants. We had a death-rate last year of 11, and I know of only four cases in our town to-day. I speak of the improvement in Bennington, not because I live there and am the health officer of the town, for I suppose St. Albans, North Bennington, Burlington and Bellows Falls, and a score of other towns, are all improving in a like manner. However, I think the local boards of health and the State Board of Health and the health officers throughout the entire state, are probably responsible for

Digitized by Google

some of this good work. As to pure air, much can be said. We have two graded schools and two parochial schools and nine town schools. One of the parochial schools accommodate 275 children and has all the improvements for ventilating and heating. The larger public school has a registration of a thousand or more. I wish a course of instruction in ventilation and heating might be given and required of every teacher before she takes charge of a school room. My great trouble is in educating the teacher how to take care of the school room. I have passed by schoolhouses to find the windows thrown open and the children walking back and forth. When I call for an explanation of such conduct, I receive an answer that the room became unbearable and the only relief available was to throw open the windows and allow the air to enter. I don't know of any way to remedy this trouble except we begin with the mother. Every mother teaches her daughter there is no way to ventilate except through the windows and doors. I have more trouble in educating a tubercular patient that he must have fresh air day and night, winter and summer, than I do with any other part of the treatment. A young girl of twenty was infected with incipient tuberculosis. Just above us is Camp Comfort, and the doctor having charge of this case advised her to go there for a rest and a change. I provided the essentials. The attending physician took the mother and the daughter up to the camp. The girl was to remain perfectly quiet, sleep all she could and eat all she could and exercise very little. She gained rapidly for a week or two and the doctor suggested calling upon her once a week on Thursday or Friday, instead of every day or every other day. The following week, on Thursday, the doctor started to make his call and upon ascending the hill three and one-half miles, found his patient sitting by the road-side. She had got down there and could not get back to her camping place. Her improvement was so great during her first week at the camp that her mother got impatient and asked her why she did not get out of bed and exercise. After a little talk with the mother she agreed to do better and obey the doctor's orders. A week afterwards the doctor went up there again but found no girl there. The mother was picking berries. The doctor asked where the girl was, and the mother replied she was in the hammock, she supposed. Some of the neighbors had come along past the hammock on their way trout fishing and had said that she looked well enough to go to walk, so she went along with them up to the river. The doctor drove up to where he was informed they had gone fishing, and there, sitting beside the stream, was the girl. Nothing more can be said. The girl died the following November. Who is responsible for that death? Have you any idea? You can't reason with mothers. Those daughters, when they are not sick, are school teachers. I have known trustees to nail down the windows to prevent the teachers from opening them. So you see, I feel as though the first work should be done with the mothers, and also that every teacher should be instructed, and intelli-

Digitized by Google

gently, too, how to govern the ventilation and heating of their respective school rooms.

Dr. C. O. Probst, Columbus, Ohio.

I don't know as I have anything to add to the subject. Dr. Kober has covered the subject very thoroughly. The city of Cincinnati is situated on the Ohio River and receives its water supply from that stream, and thus receives the filth from Pittsburg. It had a large death rate from typhoid fever before the installation of the filter plant, but since the plant has been in operation there has been very little typhoid fever. One physician told me he thought the filter plant would put at least 150 doctors out of business. In my home city, Columbus, we have had just about the same result. Our filter plant has been in operation now for about one year, and we have had very little typhoid fever since its installation. Before the installation of our filter plant we had quite a high death-rate, with some severe epidemics. Some years we have had as many as 400 deaths. It seems to me you have the most admirable natural conditions for obtaining a good supply of pure water here. You should preserve your watersheds for your various cities. I don't know how your state and various municipalities could spend their money in any better way than in preserving your natural conditions here for pure water.

Dr. C. F. Dalton, Burlington, Vt.

Just about so often some one will telephone me that sewer gas is escaping from the sink or man-hole and they very much fear they will contract diphtheria if the trouble isn't stopped. My idea of the contagiousness of diphtheria is that it is carried by coming in contact with some infected individual or infected clothing, and I was not of the opinion that it could be carried by sewer gas. I would like to know if sewer gas is effective as a carrier of diphtheria, and just how much of a factor it is.

E. A. Graves, Sunderland, Vt.

I wish to ask if bovine tuberculosis is on the increase.

Prof. Geo. M. Kober.

Taking up the subject of the possible relation of sewer air and diphtheria, I believe it is not at all likely that diphtheria is carried by sewer air. I believe the impure air has rendered the person more susceptible; has weakened his vitality, and thus leaves him in a condition where he will readily contract the disease if exposed. We know, of course, that K.L.B. is present in the mouths of perfectly healthy individuals; that is also true of the pneumococcus. It requires something more than the

Digitized by Google

organism to produce infection. There must be the lowered vitality. Animals subjected to impure gases, more particularly sewer air, and then subjected to infection, are more susceptible than the control, animals.

As regards the prevalence of bovine tuberculosis, I am not aware that bovine tuberculosis is on the increase. The same factors are responsible for the prevalence of tuberculosis among cattle as among men; and among the predisposing causes none are more potent than bad housing conditions. I am interested in some cattle out west where there is no housing at all. They never have tuberculosis. The reason you have more tuberculosis among dairy cattle is because they are housed, but without sufficient regard to light and air. Personally I do not think bovine tuberculosis is more prevalent to-day than it was ten years ago. The best way to improve the condition of your cattle is by improving the housing of your cattle. We all know that tuberculosis is less common among sailors, shepherds and farmers than among those in any other walks of life. This because they enjoy the benefits of fresh air.

Dr. A. O. Morton, St. Albans, Vt.

Substituting typhoid bacilli; is it possible for the excrement to become dry and the germs be carried up where the faucet is dry and defective?

Prof. Geo. M. Kober.

There has been a great deal of experimental work done in that direction. Recent experiments at Gibraltar indicate that it is possible for typhoid germs to be wafted in the manner suggested.

OBSERVATIONS FROM THE DAILY WORK OF A MILK INSPECTOR.

J. O. JORDAN, PH. G., MILK INSPECTOR, BOSTON, MASS.

Courage is required to approach the milk problem in these times of multiplicity of papers dealing with this subject, and in treating the question in a broad sense, the element of newness is likely to be lacking. That this is a condition and not a theory can easily be determined by those who undertake to delve into what has been written concerning this topic; one which should appeal to every consumer and producer.

Despite this condition, however, the subject is not quite threadbare, other efforts will follow, and not infrequently as in this attempt, an occasional fact will be unearthed to support a theory.

There has been a deluge of ideas for remedying the real and imaginary conditions governing the milk subject and for a time it seemed that these

Digitized by Google

wordy assaults fell upon unfertile soil; but indications now point to a healthy change of sentiment, and so it must be assumed that the varying treatments accorded this topic have served to a degree the purpose for which they were intended; namely, that of arousing public interest in this vital question. In addition to the individual awakenings there has also been fostered a spirit of organization, which has manifested itself in various commissions, leagues and societies, which are proving factors of tremendous importance in moulding public opinion. The past indifference and inertia has been great and difficult to swerve, and this change has been accomplished only after repeated and determined attempts. The contest has not yet been won, but there is a gradual awakening with the creation of corresponding healthy public sentiment. This attitude is readily discernible to observers who have devoted years to the work, and has shown itself in personal inquiries, letters and telephonic communications, so that within the past year it can be easily demonstrated that there have been many more requests for information as to sources of clean milk supplies, reports as to undesirable conditions of places where milk is produced or sold, with accompanying requests for inspections, than were ever noted before within a similar period.

This is an encouraging indication, and despite the fact that increased labor is involved, it means that the efforts of years are beginning to be crowned with success. But there is another lesson to be learned from this change; namely, that the time is not far distant when this spirit of discrimination will entail more care in the production, handling, and sale of milk, i.e. the commercial success of the milk business will require education and the employment of correct principles. Otherwise the consumption of this food will sink to a lower level.

This assertion is founded on fact and not purely theoretical, and is based upon an actual decrease of milk in a large community. In Boston since 1905 there has been a gradual lessening in the use of milk, despite the annual increase of population.

In 1906 Bostonians consumed daily about 249,196 quarts of milk; in 1908, about 236,521 quarts. The figures for 1908 denote a daily decrease of about 12,675 quarts, which for one year would approximate 4,626,375 quarts, or 1,156,594 gallons.

That this decrease may be attributed to several causes cannot be denied, but I believe that investigation would show that chief among the reasons would be the agitation against stale, dirty and diseased milk.

What are the conditions which have produced this alertness on the part of the public, and engendered this silent protest; and is there ample foundation for the position assumed by consumers? Investigation would more than support the contention of the rebellious members of our population. Furthermore, if the facts concerning the production and handling of milk were known, there would be more recruits for the constantly increasing number of non-milk users.

Digitized by Google

Investigation has in more than one instance in the past proved beneficial, and in the future it will also be found efficacious. With this truism in mind, it may serve a useful purpose to consider some of the conditions surrounding the obtaining of milk, and one of its products, cream. The demand for this latter commodity, in contradistinction to that for milk, is constantly increasing, despite the fact that its production is surrounded with two important and condemnable features; namely, the age of the product coupled with the circumstance that the milk, from which the cream is obtained, is produced at farms over which the dealers have practically no oversight. Fully 95 per cent of the cream sold in Boston comes under one or both of the objections indicated. When it is known that in summer a small amount of cream, when delivered to customers, is from 36 to 72 hours old, while the bulk of it is from 84 to 108 hours old; and that in winter this commodity is from 120 to 144 hours old, it is seen that the element of freshness is somewhat remote. Farm inspection when milk is converted into cream is a negligible factor, and undoubtedly very few of the farms, from which this milk is obtained, have attained the dignity of dairies. In fact, from the data procurable, it is not unfair to assume that many of the places raising milk for cream purposes, have never been visited by representatives from the creameries or firms buying the milk or thin cream, which later is marketed as cream of varying degrees of density. Produced with this lack of oversight, the reason that concerns, engaged in the sale of cream, make no claims as to the cleanliness or freshness of the product, is apparent. While few of the creamery owners have any knowledge of the conditions on the farms, from which their product is obtained; many of the proprietors of farms, supplying the milk or thin cream, seldom if ever visit the creameries purchasing their products. Distance of many of these farms from the creameries, and the small amount of milk produced at a majority of them, is responsible for a system by which much of the product is taken to the creameries by collectors, individuals who go to a number of farms with a team, procure or transport the milk or thin cream to creameries. These farms are scattered all over Northern New England, as well as some parts of New York. Very little Massachusetts milk is converted into cream; the eighty-four creameries known to be supplying Boston with cream are located as follows:

Vermont	36
Maine	23
New Hampshire	12
New York	9
Massachusetts	4
	84

During periods of scarcity, cream is procured from creameries not included in the above list, which lessens the probability of knowledge of farm conditions; in fact many of the middlemen possess no information as to the creameries from which they procure either regular or temporary

Digitized by Google

supplies. Hence it is seen that creamery owners and dealers do not as a rule investigate the production or preparation of the product they handle, and that the clean milk issue has yet to gain a foothold in the cream business.

Infrequent collections of milk and cream from farmers, especially in winter, combined with irregular shipments of finished products to trade centers are further drawbacks to the supplying of fresh cream. The above methods of collections and shipments are followed to save expense, but no dealer in cream will claim that the quality is improved thereby. These lax systems are made possible by the fact that at all of the creameries the cream is heated before being sent to market. If it were not for this fact, the cream business would have to be conducted on a very different basis, and undoubtedly the amount of product would be materially curtailed. Thus the easy method of heating is the substitute for farm inspection, quick transportation and delivery.

Despite all of these adverse conditions governing production and handling, the demand for cream as before noted is constantly increasing and where in former years this substance was deemed a luxury it is now considered almost a necessity. But will this demand continue if there is no change in the existing farm, creamery and handling methods? This is a query which it will be well for those interested in catering to the public to consider, bearing in mind the present attitude of consumers and the decreasing consumption of milk.

In 1908 Boston consumed about 770,000 gallons of "light cream," containing from 15 to 20 per cent of fat, and 490,500 gallons of "heavy cream," which has a fat content of from 35 to 44 per cent. In addition to this, probably about 750,000 gallons of cream were shipped from the city to supply trade elsewhere. Much of the thin cream is prepared by diluting heavy cream, after arrival in the city, with milk or skimmed milk. This is done to save transportation charges, the heavy cream being less bulky than the light variety.

The quantity of milk used for the production of cream is fast becoming a factor of magnitude in the problem of procuring an adequate milk supply. Considering the fact that the sale of cream is constantly increasing, the obtaining of enough milk for the future requires serious consideration. Boston's daily consumption of cream averages about 2,110 gallons of light cream, and 1,344 gallons of heavy cream. Assuming the light cream to contain about 17 per cent of fat and the heavy cream about 40 per cent of fat, approximately the following amounts of milk would be required for its production: Light cream, 10,022 gallons; heavy cream, 13,104 gallons; or a total of 92,504 quarts of milk. That this amount of milk equals 39 per cent of the quantity of milk consumed daily in Boston, clearly demonstrates the importance of the cream industry and its bearing upon the milk supply.

While cleanliness is a necessary factor to good milk production, an ac-

Digitized by Google

companying essential and one which can be complied with by every producer in this section of the United States, is that of an ample ice supply intelligently used. Dairymen of the present day should have acquired sufficient knowledge of the elements of proper milk production to recognize the necessity of cooling their milk quickly, and then maintaining a low temperature until the milk is delivered at the cars or to customers. Those who have not advanced their methods to the required degree, however, should have the need for quick and thorough refrigeration of milk products speedily instilled into them. The old devices, oftentimes worse than useless, and characteristic of many milk farms, are antiquated, and should not be tolerated. Ice in abundance, freely and intelligently used, is an essential to the production of what is now recognized as milk, as is the cow, and no farm is equipped for the raising of good milk unless due attention is paid to the ice issue. The time for excuses on this score is past; and while there may be opportunities for differences of opinion concerning other essentials of good milk raising, there can be none regarding refrigeration or its feasibility. The procuring of an ice supply in New England cannot be viewed as an expensive or impossible proceeding, and every dairy should annually store an ample supply to last, not only through the heated periods of ordinary years, but there should also be sufficient ice for the years of extreme high temperature, or where the warm weather is of long duration. This ice problem in its relation to milk supplies is not a fad, but a necessity, and should be considered as much a factor of the conduct of a dairy farm, as is the fuel for household or heating purposes, or the food required for the stock. Having the necessary ice it must be employed to accomplish the desired end without stint and whenever the temperature is such as to require it, and that means the greater part of the year even in this climate. Its use should be commenced early in the year, much earlier than has been deemed necessary heretofore, and should not be discontinued until the occasion for its employment is over.

Every contractor and milkman who purchases milk or cream from dairymen should make it a point to patronize only those farmers who have ample supplies of ice, and who use it freely and intelligently. The frequent use of a thermometer would be of value, not only in the purchase of milk, but also in furnishing information as to the cooling. While it is true that many dairymen are now employing ice liberally in cooling milk, progress in this direction is far from having reached the perfection desired.

There is another subject requiring further notice, and that is the method pursued by some dairymen in the handling of milk in the extreme cold weather. In their eagerness to prevent the freezing of the supply the milk is oftentimes taken into the kitchen and not infrequently placed behind the stove. Thus it is likely to be kept at a high temperature for several hours, affording opportunity for rapid bacterial development.

Digitized by Google

Samples actually subjected to this kitchen treatment have been found to contain bacteria running into the millions. Warm kitchens whether in farmhouses or elsewhere, do not afford desirable surroundings for the proper storage of milk. Producers should properly protect supplies in winter as well as in summer.

This demand for better conditions at dairies is already manifesting itself in increased interest in the health of the stock, from which milk is obtained; and in the future this inquiry on the part of consumers is destined to become more persistent and pronounced. This attitude on the part of the public is encouraging and indicative of coming insistence upon commendable surroundings for all milk production and handling. Here a pertinent query presents itself. Will it not be advantageous for those who are supplying milk to the public to forestall the inevitable, rather than to await the forcing of the issue by popular sentiment? There can be no question as to there being ample ground for public concern in the health of cows employed in milk production, in fact the only surprising feature is that this attitude has been so long delayed. A partial investigation covering a period of over four years, and unsatisfactory by reason of the demands of a busy office, disclosed nevertheless abundant evidence for the assertion that there is gross carelessness on the part of many milk producers as to the physical condition of their stock. Milk from gargety animals, and from others with apparent udder complications, or from other pronounced abnormalities, is frequently sent to market as though it was drawn from healthy stock. Unfortunately such milk does not usually possess characteristics whereby casual observation discloses its true condition, and unless detected by laboratory investigation, it is consumed by the public, and oftentimes, no doubt, to the detriment of physical welfare.

The undesirability of sending milk from diseased animals to market has not impressed itself upon the majority of dairymen. It has been necessary in many instances to resort to compulsory measures to secure the results desired. This state of affairs is significant, and demonstrates the protection which consumers secure when the question of products from unhealthy animals is entrusted entirely to the owners of the stock. Apparently if any consideration is given the subject, it is from the narrow and selfish standpoint of self-interest, which takes the form of unwillingness to lose a few cents' worth of milk, even though the health of human beings may be endangered by its subsequent use. It is difficult to draw any other conclusion, as many of these abnormal specimens are from animals where cursory examination shows their unfitness for milk production. That consumers are not given the protection which they have a right to expect, has been demonstrated on numerous occasions by the investigations which followed the finding of contaminated milk specimens. It is time that this condition was corrected, where the physical condition of cows shows their unfitness for milk production. Much progress has al-

Digitized by Google

ready been made in this respect by inaugurating a policy of exclusion, but greater efforts should be put forth to compel dairymen to keep from their milk supply the product of all animals not free from suspicion. That such a course has been made necessary is not a state of affairs tending towards increasing the consumption of milk: it is a condition discreditable to producers. Consumers have a right to expect alertness from farmers in guarding their health at all times, and in what more practical manner can this protection be shown than by not sending to market milk from diseased cows?

This is not done, however, in all instances, and a recent case of such neglect undoubtedly produced illness in two young children, whose principal diet was milk. Investigation showed that the milk was from a cow which had an injured teat and the milk from the other three quarters of the udder, which was being used by the children above noted, contained much pus. To make this condition much worse, the morning of the day that this matter was investigated, a new man in charge of the milking had put the milk from all four teats into the supply. None of the milk should have been employed for food at any time after the cow injured herself. This was a repetition of what has occurred many times since 1905. Well may consumers lose faith in those producing milk, when such conditions are constantly arising. Dairymen have it in their power to materially reduce the amount of milk infected with pus organisms. That it is not done demonstrates their disregard for the consumer's interest, and the necessity for greater discrimination on the part of purchasers in the choice of those who supply them with milk.

The matter of the tuberculous cow is an engrossing topic, and one destined in the future to arouse great public interest; and while it appeals strongly to consumers, the latter, according to present indications, are not to be allowed to monopolize the subject, as many progressive dairymen are either discussing it or have had their herds freed from diseased animals. Boards of health have already taken action in this matter, and the example of the health authorities of Montclair, New Jersey, have already been followed by Chicago, New Orleans, Minneapolis, St. Paul, and by no less than nine cities in Wisconsin. In this latter state, Milwaukee has been a leader, and is already in litigation with antagonistic dairymen, with excellent chances of the authorities winning in the attempt at milk supply purification, by demanding the tuberculin test. At present, according to Russell and Hoffman,* "over 25 per cent of the population of the state" of Wisconsin will be protected by ordinances of this character, if properly enforced. But Wisconsin's endeavors in this direction have not been confined to the adoption of regulations demanding the exclusion of milk from tuberculous cows, as during the last three years the Agricultural Experiment Station, the State Live Stock Sanitary

*Bulletin No. 175, Russell & Hoffman. A three-year campaign against tuberculosis, p. 15.

Digitized by Google

Board, and the State Veterinarians have coöperated and engaged in an energetic campaign against tuberculous animals; and with such success, with the sentiment already existing in the state, that the dairymen with clean herds are beginning to reap the reward of their wisdom. The results of this work are such as to carry the commendable conviction that much progress has been made in eliminating tuberculous animals from many of the herds of that state. In one instance* all the farmers of a county became interested in this subject, and as a result every herd in that territory was tested with tuberculin, a condition which it would probably be impossible to parallel in any county largely devoted to dairying of any state in the Union.

Is not Wisconsin activity in this crusade against disease worthy of emulation in other states, and would it not be the part of wisdom for the health authorities and dairymen of the New England States to consider this subject with greater seriousness than has been devoted to it in the past? Is each state doing all it should in this matter of tuberculous animals, and is there that coöperation of officials in any state, which brings the best results? Is there any semblance of coöperation between the several states in dealing with the problem, or is each state pursuing an independent course regardless of consequences to its neighbors? If so, would not some degree of uniformity be worthy of consideration? Uniform automobile laws have been advocated, why not a uniform method of handling the question of bovine tuberculosis? If we cannot have uniform laws, at least adopt a work-together policy equitable to all concerned.

It is time the inertia surrounding this subject was cast aside; the issue is a live one and is daily becoming more active; it affects no one community alone, but bears upon all alike, and by reason of this fact no section can afford to view it with disregard. The value of the tuberculin test, as compared to physical examination, the question of indemnity by the state to farmers for loss of stock, or whether the latter should stand the loss for condemned animals, the segregation of tuberculous animals not badly diseased for breeding purposes and so that their milk may be used commercially after heating in some one of the different ways, are questions worthy of consideration, but time should not be lost over differences of opinion to the detriment of the main issue; namely, progress and adequate protection to consumers wherever located.

Is it not the part of wisdom to exercise foresight in this matter, assume an advanced position, free herds from unhealthy stock, rather than to be driven to the step by public sentiment, or what may seem to those unwilling to coöperate, oppressive legislation? No farming community can longer afford to ignore the question of healthy cattle as a source of dairy products, and those who neglect this view will eventually be confronted with financial disaster.

*Bulletin No. 175. Russell & Hoffman. A three-year campaign against tuberculosis, p. 18.

Digitized by Google

Averill states that* "a tuberculous animal in a herd of cows is a source of danger to its herd-mates and a curse to its owner and should be removed at once to protect the health of the other animals and also of the owner and his family and of the public which consumes the milk from the herd."

Any stigma which attaches to a producer in any section is shared to a degree by his neighbors; in fact, suspicion attaches to all engaged in a similar business. Is not the lesson to be learned from this, that conditions governing dairies, whether of health of animals or of cleanliness, are of importance to the producing as well as to the consuming community, and that the oversight of this commodity has an important bearing upon the welfare of the community in which the milk was produced? There can be no question of the soundness of this contention, or of difference as to the proper course for solving the problem, namely, that each state should have an active oversight of all milk produced within its borders, regardless of where it is to be consumed or the form of dairy product it is to assume. This is a matter of importance to the Boston supply, where dependence to a large extent has to be placed upon out-of-state milk. At present, when adverse conditions are discovered, or when there is a question of quality with milk from outside the state, demands for improvement are oftentimes met with the statement that nothing can be done, as the authorities of the state from which the milk came take no action in such matters. No doubt this assertion is oftentimes groundless, but where it has foundation, we of the city are to an extent helpless, unless there is total disregard as to the amount of milk necessary for the daily supply. Neither the authorities nor the contractors can deal with this condition unaided by out-of-state authorities, as the three states from which most of the out-of-state milk is obtained are honeycombed with creameries, and where demands from Boston for new conditions are obnoxious to dairymen, the latter simply transfers his supply to a creamery or sends it to a nearby city of his own state. This condition of affairs places a premium upon independence for the filthy producer, and is a matter which can only be successfully controlled by the authorities of the state where the adverse surroundings exist. Furthermore it cannot be successfully contended that there is not good reason for milk production to be safeguarded, regardless of its use as milk, cream, butter or cheese. No milk should be produced under conditions which will not withstand the closest scrutiny.

The Wisconsin Senate and Assembly of 1909 held this view, and adopted an act defining "milk" to mean the product of "one or more healthy cows, properly fed and kept." Unsanitary milk was declared to be "milk which shall be drawn from cows that are kept in barns or stables which are not reasonably well lighted and ventilated, or are kept in barns

*Report of Herman O. Averill, Commissioner on Domestic Animals, Connecticut, 1907 and 1908.

Digitized by Google

or stables that are filthy from an accumulation of animal feces and excreta or from any other cause; or milk which shall be drawn from cows which are themselves in a filthy condition; or milk kept or transported in dirty, rusty, or open-seamed cans or other utensils; or milk that is stale, putrescent, or putrid; or milk to which has been added any unclean or unwholesome foreign substance; or milk which has been kept exposed to foul or noxious air or gases in barns occupied by animals, or kept exposed in dirty, foul, or unclean places or conditions." Cream from any such unsanitary milk is declared to be "unsanitary cream." .The sale of unsanitary milk and cream is prohibited, as is also their manufacture into any article of food for man.

In adopting this legislation, Wisconsin has taken an advanced stand; one which cannot fail to aid the clean milk issue and at the same time accrue to the financial advantage of her dairymen. The dairy interests of New England would do well to display equal wisdom, and procure such progressive legislation in the several states as would not only free milk products from adverse comment, but afford the public confidence therein.

At the present time, however, there can be no question that criticism would be justifiable in many instances, but such a stigma is an asset which is destined to mean more than financial disaster to the dairy interests of any state. It is a handicap which should be spurned by vigor of action, and not by argument, regardless of geographical location.

Dairymen have fallen into the error of assuming that the conditions governing a milk supply are of importance only to the community in which the milk is consumed. That this attitude is erroneous is evidenced by the decrease in milk consumption and the constantly increasing demand for supplies of clean milk from healthy animals.

The progressive agricultural press, and some dairymen are beginning to recognize that the former attitude of milk producers was a serious blunder. Some farming journals and dairymen not equally progressive are making the mistake of urging that there is too much agitation about milk, too many sensational articles combined with too much scare on the part of the consumer. There has not been too much agitation, the fault if any is that there has not been enough. Let the talk go on with increased vigor until the covering-up policy, which has been suggested, is abandoned. Comparison of the conditions of city tenements and cow stables, to the disparagement of the former, may be amusing to the originators, and at the same time utterly fail to teach the necessity of quickly cooling milk, or that it should be the product of healthy animals. Let this agitation proceed until the man with a penchant for surrounding cow dung with tin, learns to place it in a separate receptacle from that used to hold milk.

These conditions require heroic treatment; dairymen and dealers must purge themselves of the obnoxious features governing milk production and handling. Cowards and drones have no place in the suppression of the

Digitized by Google

tuberculous cow or of the installation and use of correct dairy methods; such work requires courage and action.

When it can be demonstrated that bovine tuberculosis is on the decline in New England, and that consumers are receiving clean milk supplies, there will be no complaint as to decrease of milk consumption. Public confidence in milk will only be restored as producers demonstrate willingness to make it clean and cease procuring it from diseased animals. The plucking out of the objectionable features requires bravery, and the remedy, if applied by the milk producer and dealer, will accrue to their financial success.

DISCUSSION.

H. L. Stillson, Esq.

When asked by Dr. Holton to lead in a discussion of Dr. Jordan's paper, the first thought was, What can I say? Later, when the learned milk inspector of the city of Boston, at my request, had kindly written out an outline of his proposed address, it occurred to me I might concur in his "observations" and emphasize a couple of points by home and foreign examples. I wish to say, first, all will concede the value of Dr. Jordan's remarks. The topic is germane to the situation in Vermont; the trend is to arouse those interested—and the people, not only the state, but of the United States, are vitally involved—in the purity of the nation's milk supply being of paramount importance.

1. Leaving the subject of "Tuberculous Cattle" to the State Commissioner, who is slated to follow me, I will briefly suggest what Vermont has begun to do legally to certify pure milk and cream for her people. Act No. 118, Laws of 1908, in effect April 1, 1909, is a long step forward, notwithstanding the "little joker" of the second paragraph in Section 1, which reads: "No person who shall incidentally sell or furnish to his neighbors milk or cream from his private dairy shall be construed to be carrying on the business of selling or supplying milk or cream within the meaning of this act"; and which exempts from license, preceded by inspection, 35 cows kept in the village of Bennington, mess fed and housed under all kinds of conditions, in lots of one, two, and occasionally three, by private owners.

I refer to the township of Bennington for two reasons: (a) Because conversant with the movement there to produce and sell certified milk and cream, and (b) the foreign municipality to which reference is made later, is about parallel in population, number of cows considered, etc. I might say, *inter alia*, for Doctor Jordan's benefit, that our township has (in round numbers) 9,000 inhabitants; has three incorporated villages,—Bennington, the largest, some 6,500 population,—and the number of certified dairy cows to supply these is 1,005, according to the computation of Frank Cromack, president of the local board of health.

To prepare for the issuance of the forty-three licenses now in force,

Digitized by Google

took the time of the president and health officer, almost continuously, from March 28 until into May, 1909, and four of these licenses are dated later. It was found impossible, driving the distances required, to inspect more than two dairies daily, and in several instances one only. There was not an exception but that the regulations demanded an outlay by each applicant of from twenty-five to several hundred dollars. Notwithstanding these essential qualifications there was not a single demurrer from the regular milk and cream producers. Several attempted, so we are afterward told, to comply with the legal requirements, gave it up, and are selling milk to Hood & Company of Boston. Another section of our dairymen, who were selling milk to Hood & Company, made application for inspections and licenses, when it was found by the law that nothing was required, because Act No. 118 limits the license-sale to "inhabitants of this state." This being the fact, the people of other commonwealths than Vermont must look out for themselves.

The larger portion of Vermont is naturally favored with conditions essential, and not possessed by others. It was found in Bennington and vicinity that mountain springs of pure water had been protected at their source by concrete walls; the water taken in quantities demanded—the trout brooks allowed to flow as usual—in pipes to the troughs in the pastures; from thence to the milk houses, the barnyards and dwellings—the cows and horses provided with separate tubs, and the whole equipment modern, sanitary and complete. The distances were from a few rods to a mile or more. The temperature of the water in April varied from 40 degrees to 45 degrees. And this, not only in the one case in mind, but true of the owners of dairy after dairy in Bennington, Pownal and Shaftsbury, from whence comes the milk and cream supply of the villages of Bennington; and to whom the forty-three licenses have been issued. The ice cream manufacturers and drug stores are required to use certified cream.

The State Board of Health performed a duty in the issue of its regulations, which deserves the glory of immortality, in five or six questions of the nearly one hundred asked for record:

(a) "Is the stable protected from such sources of contamination as privy, etc?" the "etc." meaning hogpen or henhouse. Do you know that the separator is sometimes placed in proximity to all three in localities known to some of you, the cream separated and residue fed out on the spot?

(b) "Is feeding done before milking?" Ensilage. Did you ever hear the housewife complain of the milk being "rotten"?

(c) "Is the water used for washing utensils pure?" "How do you know?"

(d) "Do the milkers wash their hands just before milking?" "Where?" Did you ever hear of either not doing this; or, if washing, doing it in some stagnant pool, anywhere?

Digitized by Google

(e) "Is the foremilk discarded?" Nearly all our best dairymen were found to answer "yes"; others had never heard of such a practice. Result, I have yet to find anyone complaining this summer of milk having been found sour in the morning. I was taught to milk, discarding the foremilk, and told the reason why, so was fortified to reply to any question along that line. But time does not permit of further explanation. So much for the Vermont crusade.

2. The second comment is correlative to the milk and cream supply, and is suggested, both by Doctor Jordan's paper, and by an article in a recent (April, 1909) quarterly issue of *The British Journal of Tuberculosis*, by Doctor Birgir Oeverland, district physician of Meraker, Norway, entitled, "Human and Bovine Tuberculosis." The startling statement that cattle are infected by human beings, and that persons afflicted with bovine tuberculosis are more curable than that acquired from another human being, supported by statistics extending from 1885, I thought might supplement the remarks of the speaker of the evening, and assist the one to follow me. As Doctor Oeverland puts it: "Does man infect cattle, or do cattle infect man, or can they both infect each other?"

To quote Doctor Oeverland: "When Koch and Von Behring, in their lectures, had urged contradictory views as regards the relation between human and cattle tuberculosis I began, within my own district, to compare the results of tuberculin tests on cattle with the number of known cases of tuberculosis in the people living on the same farms; for I thought that if the two kinds of the disease were two different varieties, which could not be transferred from one species to another, the appearance per cent of cattle tuberculosis would be the same, whether regard be had to the farms where no human tuberculosis could be found or to those where the disease was also found amongst the people. If, on the other hand, cattle tuberculosis was the predominant source of infection to man, it might be expected that human tuberculosis would in the main be found to be confined to the farms where there were reacting cows. Since the commencement of my investigations many researches have shown that cattle and man can mutually infect each other with their more or less heterogeneous bacilli. I therefore determined to ascertain, if possible, whether it is a rare or frequent occurrence on our Norwegian farms for cattle and man to infect each other."

Omitting the historical data, interesting though it is, the results of his observations are tabulated under four headings, as follows:

(a) "Farms where no positive tuberculin test in the live stock has occurred and where I have not been able to find a case of tuberculosis among the occupants; 41 barns with 434 animals." Nothing to compare.

(b) "Farms with no positive tuberculin test in the live stock, but with cases of tuberculosis among the occupants; 22, with 222 animals." Shows that the disease may and does occur among the occupants of the farm, although the cattle are not infected.

Digitized by Google

(c) "Farms with positive tuberculin test in the live stock, but with no tuberculosis among the occupants; 13, with 201 animals (16 reacted)." Showing that cattle may be infected, and it is not always certain that symptoms of the disease can be found among the people.

(d) "Farms with positive tuberculin test in the live stock and with cases of tuberculosis among the occupants; 21, with 300 animals (35 reacted)." Shows the disease under 21 instances afflicting man and cattle.

The *résumé* gives the percentages of the groups; but, in the total of 1157 animals, only 51 gave a positive tuberculin reaction, or 4.4%. The Doctor concludes, notwithstanding the 21 instances to which reference is made, that it is utterly impossible to form any opinion as to the infecting agent, but quotes two examples:

(a) "A girl, formerly healthy and of a healthy family, becomes a milkmaid on one of these farms where previously no tuberculosis had been recognized; she contracts tuberculosis, returns to her home, and dies one year later. At her home two of the other children are infected from her, and they subsequently die. On the farm where she was a milkmaid the live stock is examined two years after her death, and two of the cows react. The cattle had been examined with a negative result before the girl had come to the farm." Did the girl bring the disease to these cattle?

(b) Another instance cited would seem to reply in the affirmative. Here is the story in the Doctor's own words: "Such a case we have, in my opinion. The cattle were tested in 1901, with a negative result. About that time a new tenant came to the farm, and in his family some cases of tuberculosis occurred, after which he moved from the farm. When the cows were tested once more, in 1906, three of the animals which had been tested in 1901, reacted. The fact that in this case also some of farmer's own children exhibited suspicious symptoms, may be due to infection from the cowhouse, but also—and that is perhaps more likely—from the persons, who afterward died, with whom they had played.

Mr. President and gentlemen, I thank you for your courtesy.

Dr. E. J. Fish, South Royalton, Vt.

I am not quite certain whether it will be proper or permissible for me to raise my voice in this audience, being an *ex-health officer*. I was not fortunate enough to hear all of Professor Jordan's paper but I took a great deal of interest in the part which I did hear. He called attention to and suggested some things with regard to milk supplies which we should all take home with us and act upon. I simply want to speak of the local conditions in my part of the state. The same conditions obtain in our town as obtain in other towns, I have no doubt. Attention has been called to defects in the law whereby forty or fifty cows could be kept by a man in the little town of Bennington, selling milk to his

Digitized by Google

neighbors without complying with the conditions provided by the State Board of Health. I know when that bill was first introduced it was intended that all sellers and producers should conform, but there were a good many farmers in the house and when it was proposed that they have a right to sell to the neighbors, it had to be accepted in order to get the bill through. It was fought against, of that you may be sure, but the fight was not victorious. It was intended as you may all know, that there should be a square deal for *all*. A great deal of milk is sold from diseased animals. There is a great deal of disease caused in that way. Only yesterday morning I was at our railroad station and what I saw there yesterday has been repeated before. The milk cans are brought into the station. (I think the city end of the business is all right. I have some idea of the excellence of the work done by the inspector of Boston and I know he is trying very hard to see that everything is properly handled.) These cans which I have just said arrived at the station, I suppose had been properly cleaned when shipped. They were thrown onto the platform of the station. They landed helter-skelter fashion. The stoppers rolled out and rolled into horse manure in the street. I saw the owner of the cans come along, pick up the stoppers, brush them off on his sleeve, and replace them in the cans. If the milk inspector of Boston refuses to accept milk handled in such a way, I hope it will have a good effect upon the Vermont farmers. I always hesitate when I go to Boston and see a sign placarded in a restaurant—Pure Vermont Milk.

Dr. C. M. Ferrin, Essex Junction, Vt.

In connection with our creamery I would say they receive cream from different parts of the town, in fact separators from three towns, and it is brought to our creamery and the milk from a large number of farmers from Essex and Williston is brought there and made into butter. Every morning I see streams of men, women and children going down to this creamery to get their supply of milk and cream. They carry the cans with them. Some have cream and others milk. The question is whether the farmer or creamery has a license to peddle the milk from house to house, but still they sell it direct from the creamery. Is this just and right? The other day I was talking with a farmer who has a slaughter-house on his farm and carries meat to markets in Burlington. His place of butchering was filthy. I was laboring with him in regard to cleaning the place up and he found some fault with the law and said: "Why not inspect these farmers around here? I keep my milk clean and my utensils clean and all that, but my neighbors, whose stables and cows are filthy, carry milk to the creamery even from cows whose calves are only two days old." I tell you these things but I suppose they are some of the things which we cannot help. I know of one place where milk was sold, the stables were in a filthy condition. They did not peddle their milk from house to house, but supplied their patrons with milk; they will not

Digitized by Google

take out a license. Another farmer who has six cows peddles butter from house to house at Essex and Burlington. It seems to me the laws should be changed so as to reach these people in some way.

Dr. E. R. Clark, Castleton, Vt.

I suppose all human nature is somewhat alike. We find in our section there are two classes of people, those that do and those that don't. We have two classes of producers of milk in our town. When this subject was first agitated, the producers did not understand the necessity of the case. They did not realize certain things that were not necessary in former conditions of handling dairy products. They did not understand or realize the necessities that arise for strictly clean utensils, where milk must be kept 108 hours before it reaches the consumer. It is necessary to treat milk in a different way where it is drawn this morning and made into butter the next day. I find this to be the case that as soon as the better farmers, the men who are interested in getting the most they can out of their products, are educated up to the requirements they are going to do everything they can to better the conditions of production and a great many of them are now taking a great deal of pride and pains in fixing up their places.

Stephen N. Nutting, Westminster, Vt.

When this question came up about having buttermilk and skim milk pasteurized, I knew it was going to put creameries to a good deal of expense and I did not know what the quality of the product returned would be, after it went through the required process. So I went to the State's Attorney and asked him this question—Does buttermilk or skim milk sold to one farmer who does not feed the product to calves or cows, but to hogs, have to be pasteurized? He said: "No. If you will take notice, the law says: where buttermilk or skim milk is returned to the patron it must be pasteurized, but where it is not returned to him it does not need to be."

My attention has been called several times to the condition of the milk cans returned from Boston. They are returned with a terrible odor. It seems to me there should be a law to compel an inspection of these milk cans before they are returned to the farmer. Massachusetts officials will say they won't buy milk from Vermont or New Hampshire unless it is pasteurized. These farmers are sending into Boston pure milk, but the Massachusetts people are not looking after the milk cans which they return to the farmer. The cans are washed by machinery, stoppers replaced while cans are warm. I don't think there is a man in this audience who could stand the smell from those cans for five minutes without an ill effect.

With regard to the prevailing conditions which Dr. Ferrin spoke of I think after the thing has got to work and the farmer finds out it is

Digitized by Google

better for his cows to have clean stables, they will be exceedingly glad that these laws have been enacted.

Dr. E. S. Albee, Bellows Falls, Vt.

I don't think that we can quite say that we have certified milk. I don't think we will get it up to that standard this year nor in two or three years. The upward road has been rather slow. We must be lenient in scoring the dairies. I have sent up forty odd samples of milk to the State Laboratory and I think only five were reported dirty. I don't know whether that is a fair average or not, but that was the number reported dirty from Bellows Falls.

Stephen N. Nutting.

Dr. Albee and I worked on the same territory and these matters have been talked over a great many times together. In coming up here and talking them over with Mr. Stillson of Bennington, he tells me how he does in his town, in regard to licensing. However, I would like a little further information. The Doctor and I have only taken a license from the peddler and not the farmer. Mr. Stillson tells us he takes a license from the farmer as well as the peddler. I feel as though all matters of this nature should be alike throughout the state and I would like to have an opinion which I could work upon.

Dr. C. S. Caverly.

As perhaps most of you know, the State Board of Health, together with the Cattle Commissioner, have taken up the subject of pasteurization of skim milk and buttermilk of creameries. There has been considerable criticism of the rulings of the State Board and the Cattle Commissioner. They are jointly required by the law to formulate rules for the pasteurization of this milk. There has been considerable criticism in the newspapers in regard to the effect of the product upon calves and pigs to which it has been fed. The State Board, and I presume the Cattle Commissioner, have had the impression that it was more or less newspaper talk or was at least considerably exaggerated. This, by the way, is not a measure which comes directly under the control of the State Board of Health. It is an adjunct of the Cattle Commission law. The Cattle Commissioner is the one who really has the authority over these creameries and is given enforcement of this law. I wrote him some time ago asking him to give me a statement of the matter which could be read here at this school and I have two letters from him. The first tells me that he, the cattle commissioner, is very ill and has not been able to give his personal attention to this work for several months, but he has one or more men on the road who are looking after this with other details of his work. He says that the man he has had on the road for the last three months visited the creameries in six counties of the state and he has never known

Digitized by Google

of any animal fed with sterilized skim milk or buttermilk, which has been killed by its consumption. I wrote and asked him if any were injured and if pasteurization would injure the nutritive properties of the milk. The man on the road replied that he has talked with a great many farmers and almost invariably they find no fault with the sterilized milk returned to them. The objection comes from those who have not used it. Those who have used the product, say they see no difference. Seven-tenths of the users say it is all right. He also reports that he has yet to find a single instance of its causing a death of any animal or an authentic case of one being injured. I have given you the information that you may distribute it as you see fit in your own towns. It is a question which has caused considerable discussion and one which perhaps is not as yet thoroughly settled.

Dr. B. H. Stone, Burlington, Vt.

When Mr. Canfield first started on the road and commenced to send in samples, we found some of the samples did not show the effect of pasteurization, but I think within the last four or five weeks all the creameries which he has visited have pasteurized their products satisfactorily. Some of the trouble, which may have started some of these stories, may have been on account of boiling the milk, through faulty methods of pasteurization. They failed at first to install satisfactory apparatus and in order to insure themselves against possible underheating they brought the milk up to the boiling point. Milk brought to the boiling point would probably be injured in its nutritive properties and perhaps injure the calves to which it was fed.

Dr. Henry D. Holton, Brattleboro, Vt.

Did you have any trouble in breaking up the curds?

Dr. B. H. Stone, Burlington, Vt.

No. That was one of the arguments made; that it would be practically impossible to break up buttermilk. Experimentally, it is not so.

J. O. Jordan, Ph. G., Boston, Mass.

I think one of the speakers has summed the matter up correctly. Farmers have been producing milk after the manner of their grandfathers. Some, however, are improving; and others, as the gentleman said, are going on in the old way.

The question was asked, What should be done with milk when there is a case of scarlet fever or diphtheria in the household? Such milk should not be taken from the place of production. Contractors are willing to pay farmers for the milk, where cases of infections diseases exist, rather than have it shipped to them, and present contracts contain a provision to this effect. If they are not living up to these contracts,

Digitized by Google

I desire to be informed of the fact. It is the part of wisdom not to use such milk.

The necessity of pasteurizing skim milk and buttermilk emphasizes the need of cleanliness. Why is it necessary to pasteurize these products? Milk is oftentimes contaminated with the feces from the cow, cows excrete tubercle bacilli with their feces, and this dirt falling into the milk pail contaminates the milk.

Now there is a slight absurdity in a law like that of your state, which requires the heating of skim milk or buttermilk. You admit, when the skim milk and buttermilk are pasteurized, that the danger from feeding these products to calves and pigs is past, but how about the use of the whole milk for human beings? Are you looking after them as well as you are for dumb animals? Skim milk and buttermilk from out of the state must be pasteurized before it is admitted into your state. Of course you do not need to have much whole milk brought in, but the question seems to be, Is your concern for individuals equal to that for your live stock? Boston has been buying milk from Vermont, but not all of the milk which is shipped from this state is sent to Boston. However, the major portion is bought by Boston contractors, but they also do business in other states. Some of this milk is sent to Old Orchard, Lynn, and Salem; and there are many dairies, the milk from which has been excluded from Boston, which are now shipping to other cities in Massachusetts, and to cities in other states.

We plan to have all of the cans that go out of the city of Boston clean, or as clean as is possible to make them. It requires about forty thousand cans to bring milk into the city, to say nothing of the number used for city trade. This necessitates rapid washing.

The question is raised, Why does Massachusetts not exclude contaminated milk? We can do this, but we must have some milk. I hope to see conditions such that we can eliminate all bad milk. I don't believe our people are quite ready for this at the present time, and there is no doubt that such a step would seriously influence the price of this commodity. A great trouble is that farmers are not careful to guard the production of milk. In Massachusetts an attempt was made to pass a law giving the State Board of Health the right to frame rulings governing the production of milk, but this progressive measure met with defeat.

As to the condition of the cans, noted at railroad depots, that is likely to follow from rapid handling, but Boston must not be blamed for dirty cans which come here from other cities, and from which cans may be sent regularly in the unwashed state. Farmers ought not to put milk into cans, however, unless they are in proper condition for its reception. Washed cans have to be stoppered when quite warm, and some no doubt bear an odor. If there are any cans which are not in a proper condition, they should be made so by the producer before milk is placed in them. Instances have been noted where cans have come from the country

Digitized by Google

with a full pint of railroad gravel in them. We have forty thousand cans of milk a day, and it is not possible to look at each can; but if an example is made, a wholesome influence is gained.

Q. Could you not hold the contractor responsible for the cleanliness of those cans?

If the contractor is doing his best, that condition should be given consideration, but they are held responsible for the cleanliness of cans. No dealer is allowed to sell milk where it was found that it was contained in a dirty can.

Q. *Lawrence.* Suppose the contractor gets a can of milk, which is obviously unclean, and it gets by your inspector and he sells it. Isn't he liable?

Any man who handles for sale impure milk may be fined or imprisoned. We have a law which prohibits any foreign substance, including dirt, in milk, and when foreign substances are found, the dealer is prosecuted.

Lawrence. Every man has seen this same condition, who has been at the railroad trains, and we all know the conditions are vile. They are so filthy that even without any health laws, if the conditions became universally known, the milk could not be sold. In fact no one would purchase the milk, if they knew under what conditions it was produced. Our view is, the contractor is after every dollar there is in it. If pressure is not put on and an inspection made, and the contractor held responsible, nothing is to be gained. You cannot put the pressure on the farmer here. We have not the means to make an efficient inspection. The cans for milk shipped from this state are properly cleaned, but the railroad employees open them, and all sorts of contamination are allowed to enter. The only way in which you can bring the consumer and the farmer together is by holding the contractor liable for selling impure milk. Unless the man who offers it for sale in Boston is held, he won't be strict with his patrons up here.

LEGAL POINTS IN HEALTH WORK.

BY HON. ROBERT A. LAWRENCE.

It is a great pleasure to be present and participate again in the work of this School. Under the laws as they stand to-day, no officers in our towns have it in their power directly and immediately to do so much good to their fellow citizens, their neighbors and friends, as the health officers. And a great responsibility rests upon them. They are the outposts in the fight against disease, they are the guardians of the food and the water that every man must have.

More and more the community, in the town, the state and the nation, is turning its attention to the prevention of disease, rather than cure

Digitized by Google

of it, and to guarding against fraud and imposition upon the general public in the most vital of its purchases, its food, by inspection and constant vigilance, rather than by criminal prosecutions after the wrong has been done.

In this state, you are the agents chosen to stand in your various communities for the state in its oversight of the people. Every legislature adds to your power and increases your responsibilities, but with each year that passes an intelligent public opinion is coming to your aid. Already quarantine of contagious diseases, the registration of births and deaths, the regulation of the transportation of dead bodies, have come to be accepted as a matter of course, and it is only occasionally that the health officer encounters opposition to his orders and requirements in these matters.

But there are some phases of the health laws that are still almost unknown and unenforced, or are just beginning to be brought to public attention. Of these, I shall very briefly call your attention to the Pure Food Laws, and particularly those relating to milk and meat, the laws controlling water supplies and sewerage, and the laws dealing with the sanitation of buildings.

PURE FOOD LAWS.

In a general way the State Board of Health through its inspectors has taken this matter in charge, and canned goods, bottled goods and all brands of food sold under seal are examined and analyzed from time to time at the State Laboratory, so that unless the local health officer has reason to believe that some particular brand is being sold in violation of law, there is ordinarily no occasion for him to take samples for analysis unless so instructed by the State Board. But over all goods sold in bulk, he should keep the closest watch, for it rests with the local health officer to see that the butter, milk, meat and all food sold unsealed, are pure and wholesome and are what they purport to be.

Under the provisions of Section 5478 of the Public Statutes, the local health officer "may inspect the carcasses of slaughtered animals intended for food, and meat, fish, vegetables, produce, fruit or provisions found in his town, and for such purpose may enter any building, enclosure or other place in which such carcasses or articles are stored, kept or exposed for sale."

In the same section, it is also provided that "If such carcasses or articles are designated for food for man, and are found tainted, diseased, corrupted, decayed, unwholesome, or for any cause unfit for food, the local board of health shall seize the same and cause it to be forthwith destroyed or disposed of otherwise than for food."

You will note that it is the *local board of health,* and not the health officer, who can seize and destroy the condemned articles. The local health officer may and should make inspections and when he finds food that

Digitized by Google

appears to him unfit for use, he should at once mark it in some way, without injuring the food, so that he can identify it again; notify the owner of the food, or whoever is in charge of the place where it is kept for sale, that it must not be sold for food, stating the reason why and calling his attention to the provisions of the law (Section 5475, Public Statutes), which provide imprisonment for not more than one year or a fine of not more than $400 for the sale or offering for sale of an article of food or drink, which is adulterated or misbranded, or of any kind of diseased or unwholesome provisions.

If the articles are such as ought to be destroyed under the provisions of Section 5478, just quoted, the health officer should get a majority of the local board of health together, which would in towns consist of at least two of the selectmen with the local health officer, have the board see the article in question and seize and order it destroyed. There should appear on the records of the local board of health minutes of the meeting where this is done, and a record of the vote taken that the article in question is unfit for food, stating the reason why, and a record that the board of health voted to seize the same and ordered it to be destroyed, setting forth the method of destruction and the person or persons authorized to destroy the article. Whoever is appointed to destroy the food should report to the board of health that its instructions have been carried out and the manner, time and place where they were carried out. All these things should appear in detail in the records of the local board of health, so that in case any question should be raised about the legality of the proceeding or the right of the persons who seized and destroyed the goods to do so, all steps will appear to have been regularly taken.

This is important, for where property is seized and destroyed the health officer must be able to show that the law has been strictly complied with in every respect or he will be personally liable for his acts. It must also be remembered that the judgment of the board of health does not protect him or them. Where an officer or a board is given authority to take action under certain conditions without notice to the parties and without hearing, its action cannot be final, but if it is later called in question the officer or the board must be able to establish the facts necessary to constitute a basis under the law for the action taken, and this by the rules of legal evidence. Thus, in destroying food, the board of health must first be sure that the articles are *designated* (the Statute says "designated") for human use and are kept and offered for sale, then that they are unfit for food, and finally, every step in condemning and destroying the articles must be taken in strict compliance with the law. It is always well to have one or more disinterested and reliable witnesses (not members of the local board) who can testify, if needed, to the facts necessary to be established.

Under the law, as it reads, I do not see how the local health officer

Digitized by Google

has any right to remove articles, which he may consider ought to be destroyed, from the premises where he finds them until after the local board of health has acted upon the matter. To save any question, it would be better for the local board of health or a majority of the board to go to the place where the article in question is and see it before taking action concerning it, but probably this is not necessary, and in many cases it would be impracticable, and if the health officers are to proceed at all to seize and destroy unwholesome provisions for food, in many cases the local board of health must act at a meeting held elsewhere than at the place where the food is, relying for information upon the report of the health officer.

The records of the board of health should show whether the board of health as a body visited and examined the article in question, or whether it acted upon the report of the health officer, and if so, the report of the health officer should appear in the minutes.

I do not find any provisions of the law for a local health officer to purchase at the expense of the state or town samples of articles of food offered for sale, to be sent to the State Laboratory for analysis. I should advise that if a health officer believes articles of food are being sold in his town, which are adulterated, misbranded or unfit for use as food in any way, he should communicate at once with the secretary or president of the State Board of Health, report the facts and get instructions as to the course to be pursued. In many instances it will be found that the State Board has already obtained analyses of the goods in question. But if for any reason the local health officer feels that he should act in the matter at once and have an examination made, he ought not to hesitate to make purchase of a small amount and send it to the Laboratory for analysis. In most instances probably no question will be raised by the town officers if he charged as part of his expenses the sum which he paid out to procure the samples, provided this sum was kept down to a small amount.

Section 5479 of the Public Statutes provides that "A person who doubts the purity or genuineness of an article of food or drug, which he has purchased, may at his own expense send a sealed sample of it to the State Laboratory of Hygiene for inspection."

There the matter passes into the hands of the State Board to take such action as the case seems to require. So if complaints are made to the local health officer by purchasers of food and provisions, one good way to deal with the complaints is to request the complainant to send a small sample properly sealed to the State Laboratory stating where it was purchased and of whom, the health officer at the same time making a written report of the complaint and action taken to the secretary of the State Board of Health. But you will notice that if an individual, who is not a health officer, sends in a sample, it must be at his own expense. This does not mean that he must pay for the examination at the Laboratory,

Digitized by Google

but merely pay for the sample, see that it is properly sealed and pay the expense of sending it to the Laboratory, in most instances the total amount involved being very small.

In taking samples to be sent to the Laboratory for analysis, if the occasion arises where the local health officer thinks it best to do so, or is directed to do so by the State Board, he should if possible take a disinterested and reliable person with him as a witness when he makes the purchase. He should if possible make the purchase of the owner, or at least of the person in charge of the place where the article is kept, and he should in any event go prepared to seal up the article taken just as soon as he purchases it and do this in the presence of the person from whom he purchases it, and the witness whom he takes with him, if he has some one. It is sufficient if he simply fastens white seals over the openings of the package, whether the goods are in cans, bottles or in bulk and done up in paper, writing upon the seals his name and the date and the name of the person offering the goods for sale. These steps are necessary if the analysis of the sample is to be used as legal evidence in a subsequent prosecution.

It is almost needless to say that the local health officers must of necessity be depended upon to keep watch of the sale of food and provisions in their respective towns with a very close scrutiny, because the State Board has a wide field to cover and its efficiency can be immeasurably increased or diminished, according to the activity and vigilance of the local health officers.

MILK.

One branch of the Pure Food Law, which depends almost wholly for its enforcement upon the vigilance and activity of the local health officers, is that which deals with milk and milk products.

In the last few years a very great change has taken place in the laws governing the production and sale of milk and its products. The beginning of the enforcement of these laws has already made a very great change in conditions, but only a beginning has been made and unceasing vigilance will be required if the advantage already gained is to be kept and we are to move on year by year to better conditions.

Standard milk is defined in No. 4931, Public Statutes, as milk containing not less than 12½ per cent of solids or not less than 9¼ per cent of total solids, exclusive of fat, except in the months of May and June, when it shall contain not less than 12 per cent total solids. Persons who sell and furnish milk which does not comply with this standard, are violating the law and liable to prosecution. No milk or cream can be legally sold which has been diluted with water, or adulterated or treated with chemicals. Nor shall the person sell or offer for sale milk from which the cream or a part thereof has been taken, without the full knowledge of the person to whom such milk is sold or offered for sale. A person who violates any

Digitized by Google

of these provisions, shall be fined not more than $300, nor less than $50 for each offense.

The policy of the State Board of Health has been to rely largely upon the publicity of the results of examination of milk and cream taken from the different dealers about the state from time to time to improve conditions, under which the milk is produced and sold. A very marked improvement has been shown all through the state as a result of these examinations and their publication. At first, as many of you know, nearly all of the samples of milk were dirty. Now it is the exception to find milk being offered for sale which contains dirt or other deleterious matter. But the time has come now when, in flagrant cases at least, prosecutions are probably advisable where milk offered for sale contains dirt or other deleterious matter, and more especially in those cases where repeated tests fail to show an improvement in milk.

In all cases where water has been found in the milk, prosecutions have been recommended by the State Board, and in most instances they have followed. Usually the respondent has pleaded guilty without trial, when confronted with the results of the state examination. It is of the utmost importance that the law should be strictly followed in taking the samples and laying the foundation for a subsequent prosecution, if the samples warrant. Unless a situation arises where there is evidence from persons who have seen the milk watered, and these instances must necessarily be very rare indeed, convictions must necessarily depend upon the samples taken and analyzed at the State Laboratory. These samples are usually taken by the local health officers, and it is therefore of the utmost importance that they should understand and follow closely the law in this respect.

Section 4929 provides that samples of the milk or cream in question must be taken from such milk or cream in the presence of at least one disinterested witness, and with the knowledge and in the presence of the person or the agent or servant of the person so selling, or having in his possession with intent to sell, the milk or cream, and this must be sealed up by the person taking the sample then and there, when it is taken, in the presence of the witness and the owner or his agent or servant.

Section 4930 provides that "Such samples shall be placed in tin or glass vessels, securely sealed with a label thereon, stating the time when and place where the samples were drawn, from whose milk or cream taken, and signed by the person taking the same and by one or more disinterested witnesses."

The same section also provides that "upon request a like sample (and this means a sample taken in the same way and prepared in the same way) shall be given to such person, his agent or servant, for which a receipt shall be given to the person taking or drawing the same."

This does not mean that samples otherwise taken and analyzed cannot be used as evidence, but the force of the evidence is greatly increased

Digitized by Google

if the samples are taken as here provided, and the moment these requirements are departed from, the health officer never can be sure of the foundation of his case.

I would strongly urge upon every health officer who undertakes to get samples of milk for analysis to read these sections carefully every time he starts, and go prepared to comply with them. It cannot be too much emphasized that in all prosecutions the law requires a strict compliance with the provisions of the statutes.

Sections 4936 to 4939 of the Public Statutes provide penalties for the misuse of milk cans or milk receptacles, and provide that they shall be kept clean and free from any matter which might injure the milk. In fact these sections provide that nothing shall be put in milk cans or milk receptacles other than milk in some of its forms, or water, or other agent used for cleansing the receptacles, and any person who receives milk receptacles, which contain or have been used as containers of any offensive material or substance, is required to submit the receptacle to the health officer of the town for examination, and upon examination, it may be adjudged a nuisance and proceeded against accordingly.

There are also provisions in the law against the sale of adulterated butter, and also provisions that butter shall not be labeled as "Creamery Butter" unless in fact made in the creamery.

Section 5436 of the Public Statutes provides that the "health officer shall make sanitary inspections whenever and wherever he has reason to suspect that anything exists which may be detrimental to the public health. He may enter any house or other building for the purpose of making such inspection." So whenever he suspects conditions surrounding the production of milk to be insanitary, he not only may, but must make inspections. The local board of health may make orders for the removal of filth, which would include filth which gets into milk, but you will note that it is the board which must do this. The health officer, as its executive officer, must carry out its orders.

Under the provisions of No. 118 of the Acts of 1908, the local board, before issuing a license to a milk peddler, must inspect the cows producing the milk, the premises and utensils used in its production, and shall not grant the license unless the cows are healthy and the premises and utensils in sanitary condition.

As a practical proposition in order to most effectively bring about clean milk and milk products, the health officer should inspect the barns and premises where the milk and butter are produced and by suggestions to the milk producers, show them how defects which have caused trouble can be remedied, and I feel sure that the members of the State Board of Health and the members of the staff of the State Laboratory will always be glad to respond to requests from the local health officers to assist them in educating and showing the milk producers how to make conditions such as will avoid trouble in the future.

Digitized by Google

In Rutland County at least most beneficial results have been obtained by meetings of the milk producers with the state's attorney and local health officers and a member of the State Laboratory staff. At these meetings the methods of examining milk have been explained and the cause of the trouble talked over and, whenever possible, practical suggestions as to remedies have been discussed with much advantage to all.

With the enforcement of these laws, it must be remembered that they are making new conditions necessary in many of our farms, and in many cases are requiring the expenditure of considerable money on the part of the farmers, in order to put their buildings in proper shape. And more than anything else, it is important to keep in mind that with the enforcement of the law, we must make the farmers and milk producers see the reasons which underlie its requirements and show them in every instance the willingness of the state authorities to coöperate with them.

I would strongly recommend that the provisions of Chapter 210, or so much thereof as relate to milk and the taking of samples for analysis, as well as No. 118 of the Acts of 1908, be included by the State Board in the pamphlet of Public Health Laws printed for distribution.

SLAUGHTER HOUSES.

The Legislature of 1908 passed Act No. 157, giving power to the State Board of Health to make and enforce such regulations for the purpose of controlling the sanitation of slaughter houses and other places where meat and meat products are prepared and kept for sale or storage, and under the provisions of this act, the State Board has promulgated rules and regulations as to the condition under which the business of slaughtering animals and selling meat shall be conducted. It is the duty of the local health officers to see that these rules are lived up to, and frequent inspections of the places where this business is carried on will be necessary.

Proper conditions in handling the meat will only be obtained by the exercise of constant vigilance. Here again if the local health officers find cases with which it is hard for them to deal and where their suggestions and orders are not properly carried out, I would suggest that they report to the State Board of Health, and also to the state's attorney of the county where the trouble arises.

WATER SUPPLY AND SEWAGE.

The general oversight and care of water, streams and ponds used as a source of public water or ice supply and tributaries thereto, is given to the State Board of Health, which has authority to require plans and data concerning the water supply, to be submitted to it by the town, village or company controlling it, and also the power to prohibit the use of water

Digitized by Google

or ice, if in its opinion the use thereof is dangerous to the public health. This law has been recently upheld by the Supreme Court of our state in the St. Johnsbury case, where the State Board of Health prohibited the use of certain water.

The duties of the local health officers in this connection consist in keeping sharp watch of the source of supply, taking samples at frequent intervals and sending them to the State Laboratory for analysis and calling the attention of the State Board of Health and the town authorities to the result of their work whenever there is any occasion for action to be taken.

Closely allied with and in fact an essential part of the protection of the water supply is the matter of the disposal of sewage.

Under Section 5500 Public Statutes, all towns, villages or persons shall submit to the State Board of Health for its advice their proposed systems of public water supply and systems for the disposal of drainage or sewage, and the State Board is given power to employ experts at the expense of the state, if thought necessary, in considering and giving advice concerning the best plans to be adopted. This provision of the law is not, I think, very generally known, and it is the duty of the health officer of each town, when any steps in connection with the public water supply or public sewage system are proposed to be taken by the city, town, village or any person, to see to it that the attention of those in charge of the proposed work is called to the provisions of this section, and that the plans are submitted to the State Board of Health before any action is taken.

All systems of water supply whether owned by municipalities or by private persons, whether they supply large cities or are provided in country villages for only a few houses, should have the closest scrutiny of the local health officers, and are all placed under the care of the State Board of Health, and any new water system should not be laid out until plans have been submitted to the State Board of Health, and approved by it. It will save much time and trouble in the end if the local health officers will see to it that this is understood in their localities and that the law is complied with.

The plans for any public system for the disposal of drainage or sewage must also be submitted to the State Board of Health before it is laid out.

Section 5507, enacted in 1902 for the first time, provides that "No sewage, drainage, refuse or polluting matter of such kind and amount as either by itself or in connection with other matter will corrupt or impair the quality of the water of a pond or stream used as a source of ice or water supply by a town, village, public institution, water or ice company, or person for domestic use, or render it injurious to health, shall be discharged into any such stream or pond or upon their banks."

Under the provision of this Section, it would seem that no sewage system or private sewer can hereafter be discharged into a stream which is at a lower point used for domestic purposes, if the sewage or drainage is of

Digitized by Google

such kind and amount as to impair or corrupt the quality of the water. This is a very sweeping provision and appears to place it in the power of health officers and boards of health, by invoking this statute, to control the discharge of sewage and drainage into streams.

Section 5462 prohibits the deposit of any dead animal or animal substance into or upon the bank of any lake, running stream or spring. The custom has been in many instances to establish slaughter houses on the banks of streams so that the waste and offal would be washed into the stream and carried away. This is contrary to law and should be stopped whenever it occurs. Much remains to be done in the way of purifying our streams and ponds and all our streams for water supply.

The local health officer, when he finds cases of pollution which are not remedied at his suggestion, should call the attention of the State Board of Health to the situation and also bring it to the attention of the state's attorney. It is necessary, if legal action is to be taken, to compel obedience to the law and a removal of nuisances on the banks of streams and ponds, that the law should be strictly complied with and each detail of the proceedings carefully attended to. In many instances a compliance with the requirements of the laws and the rules of the State Board of health as to water supplies and sewage will mean a considerable expenditure of money by the persons offending, and for this reason they are more apt to make a contest of these cases than in many others. It is far better therefore that local health officers, even if they should find that they have the power to deal with certain cases, should refer the matters to the State Board of Health for suggestions, as well as consult with the state's attorney.

Act No. 86 of the laws of 1908 provides that the selectmen of the town have authority to construct sewers in any village in the town—even though the village may not be incorporated. This may be done upon a petition signed by ten or more legal voters of the town, or by order of the State Board of Health, but the expense is to be assessed upon the persons benefited thereby. There is no reason why a public sewer cannot, upon petition of ten legal voters of the town, be put in by the selectmen in any village where public necessity requires it. The local board of health can then compel all persons abutting on the street containing a sewer to connect with it.

PUBLIC BUILDINGS.

Power is given by Section 5416 Public Statutes to the State Board of Health to issue regulations as to lighting, heating and ventilating schoolhouses and public buildings, and provide for their inspection and regulation by the local Board of Health.

This section provides that "A person, corporation or committee intending to erect a public building, shall submit plans thereof showing the

Digitized by Google

method of heating, plumbing, ventilation and sanitary arrangements (to the State Board of Health) and procure its approval thereof before erecting such building," and a fine of not less than $100 nor more than $500 is provided to be imposed upon any person who fails to do this. (See Sec. 5412, which defines the term "public buildings.")

Local health officers should see that these regulations are called to the attention of all persons, whether town officers or private individuals, who are intending to erect a building for public use. Not only should buildings be inspected and their use regulated, but plans for all new public buildings, whether to be erected by municipalities or individuals should be submitted to the State Board of Health for its approval. It will depend largely upon the local health officers to see that this law is lived up to.

School buildings may be condemned and their use prohibited by the State Board of Health. Local health officers should see to it that these buildings comply with the sanitary requirements and regulations of the State Board, and whenever school buildings fail to do so, report should be made to the State Board for such action as is thought best.

In conclusion, let me urge you again to impress upon the people of your communities that you are their servants, and are working for their good; that you are not interfering with their affairs or invading their privacy, as you sometimes have to do, out of caprice and a purely arbitrary exercise of your power, but are merely enforcing general rules and laws, which are made for the good of the community as a whole. It is true that individuals will often be put to inconvenience and perhaps pecuniary loss in obeying the health regulations which the community has adopted, but no member of the community, I venture to say, would for a moment consider that the laws were unjust and unreasonable and that their requirements ought not to be strictly complied with, if his neighbors were the ones the law reached, and not himself. The man who objects to quarantine as unnecessary or burdensome, would not under any circumstances wish to have a contagious disease in another family left without restraint.

Not the least of your duties is to educate the community to the importance of the health regulations and to cultivate more of that genuine public spirit, which makes men think of the good of the community, when the law requires some sacrifice on their part, and willing to undergo some inconvenience and loss for the sake of their neighbors. The patriotism that makes a man a good citizen in his community, ready to obey the laws in spirit as well as in letter, is as fine and inspiring as the patriotism of any battlefield.

You can do no more important work than to inculcate this spirit, and your ideal should be to so educate the people of your community that even where the law does not require it, they will of themselves or at your suggestion be ready to govern themselves in matters that touch the public health with the good of the public first in mind.

Digitized by Google

QUESTIONS AND ANSWERS.

Q. If in a town with a lay health officer, a person dies without medical attendance, and the local physicians refuse to sign death certificate or perform autopsy, what is the duty of health officer?

A. If the health officer does not think an autopsy necessary to determine the cause of death, he may issue the certificate of death himself. (See Sec. 3309, Pub. Stat.)

If he does think an autopsy necessary, and the local physicians refuse to perform it, he can get a physician from out of town. If he has difficulty in doing this, he had better consult the state's attorney, or if he cannot get him, and is within easy reach of some member of the State Board of Health, he might get assistance by communicating with him.

Q. When a person drops dead or is found dead and there is no evidence of foul play and he or she has not had a doctor for six weeks, is it necessary to have an autopsy to fill out the death certificate? if so, who orders it, the health officer or the selectmen; and who foots the bill?

A. It rests with the health officer to determine whether there shall be an autopsy or not, and if he decides that there shall be one, he orders it, not the selectmen. The town pays the bill. The health officer may, if he does not consider an autopsy necessary, issue a certificate of death without one.

In all cases where a person is found dead, it is wise to telephone the state's attorney before disposing of the case, and inform him of the situation. He may wish to direct some investigation before the body is disposed of. Of course if there is the slightest suspicion that there has been foul play, the state's attorney should be notified at once.

Q. What is a health officer's duty in this case? A dead body found at the foot of a ledge in the woods, where he had evidently fallen by accident, and lain there four or five days in very hot weather and was in a bad state of decomposition.

A. It is always better to notify the state's attorney when a dead body is found under such circumstances before disposing of it, and as soon as possible. It should certainly be done if there is the slightest suspicion of foul play. And even where there is no evidence of that, it is better to consult with the state's attorney by telephone or in person, for he may possess information which will make investigation desirable. Unless precautions are taken to completely set at rest any suspicion of crime before the body is removed or buried, it may and quite often does happen that relatives of the deceased or newspapers start talk that a crime has been committed and the officers are put to a great deal of trouble and expense that might have been avoided by a little investigation at the time the body was first discovered.

But if the health officer does not think it necessary to notify the state's attorney, he may issue a burial or removal permit himself without any

Digitized by Google

physician's certificate, or may order an autopsy at the expense of the town before doing so. (See Sec. 3309.)

Q. How is a health officer appointed?

A. Section 5433, as amended by No. 153 of the Acts of 1908, provides that the State Board of Health shall appoint a health officer for each town. Before the act of 1908 the State Board of Health was required to appoint such person as the selectmen of the town or board of aldermen of the city nominated, but now the appointment is wholly in the hands of the State Board of Health.

Q. How can an objectionable health officer be removed?

A. The health officer may be removed by the State Board of Health, and if the citizens of the town have reason for desiring to have him removed, the way to have it brought about is for them to communicate with the State Board of Health, stating the reasons which make the health officer objectionable.

Q. Should the milk producer who sells his product to a local dealer be required to take a license? Is it necessary for the farmer who sells his milk to a milk peddler to procure a license?

A. No. Only the person who sells from house to house is required to take out a license, though the premises, cattle and utensils of whoever supplies him are subject to inspection. (See No. 118, Acts of 1908.)

I learn that there has been considerable diversity of opinion as to the persons who should be required to take out licenses under the provisions of No. 118 of the Acts of 1908.

I am advised by the attorney general that for the sake of obtaining uniformity in the administration of the law, the prosecuting officers throughout the state have decided to adopt the following rule for prosecutions under this act:

"The criterion by which it is to be decided whether a person who sells and delivers milk from house to house shall, or shall not, be required to have a license from the board of health, is not the number of cows he keeps, or from which the milk is produced, but the purpose for which the cows are kept. If the main purpose of keeping such cows is for the production of milk for sale and delivery at the houses of customers, the keeper of the cows comes within the provisions of this Act, and must not so sell milk without a license, and if he does so sell it he should be prosecuted.

"If the cows are kept for some other purpose, as for the production of milk and cream for the keeper's own family use or for making butter or cheese and the sale and delivery of the milk to neighbors is incidental, that is, beside the main design of keeping cows, then the keeper does not come within the provisions of this Act, and prosecuting officers of the state should not subject him to any prosecution."

Digitized by Google

SPECIMENS EXAMINED AT LABORATORY OF HYGIENE, FOURTH QUARTER, OCTOBER, NOVEMBER AND DECEMBER, 1909.

Waters.

Ground waters:		
Normal	34	
Showing present pollution	21	
Showing past pollution	29	
Showing past and present pollution	35	
Surface waters:		
Normal	45	
Polluted	37	
Total		201

Sputum for Tubercle Bacilli.

Male:		
Positive	51	
Negative	111	
Female:		
Positive	40	
Negative	125	
Sex not stated:		
Positive	5	
Negative	14	
Total		246

Cultures for Diphtheria Bacilli.

Positive	742	
Negative	2793	
Suspicious	13	
Total		3548

Blood for Widal Reaction.

Positive	103	
Negative	185	
Total		288

Blood for Malaria.

Positive	—	
Negative	5	
Total		5

Milk and Cream.

Above standard	94	
Below standard	18	
Total (detail table following)		112

Digitized by Google

FOODS.

Above standard	164	
Below standard	20	
Total (detail table following)		184

CREAMERY BY-PRODUCTS FOR PASTEURIZATION.
(Skim Milk and Buttermilk.)

Positive		
Negative		

MISCELLANEOUS ANALYSES.

Positive	87	
Negative	63	
Unclassified	—	
Total		150

Liquors examined under provisions of the fourth class license law:

WHISKEYS.

Passed	100	
Not passed	—	
Total		100

BRANDIES.

Passed	6

DRUGS.

Legal	12	
Illegal	7	
Total (detail table following)		19

MALT LIQUORS.

Passed	9

MISCELLANEOUS LIQUORS.

Passed	194	
Not passed	—	
Total		194

MEDICO-LEGAL CASES (DETAIL TABLE FOLLOWING).

Total number of examinations made	51
Total number of examinations made during the quarter,	5122

Digitized by Google

Milk—Below Standard

Specimens Examined at the Laboratory of Hygiene during Last Quarter, 1909

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
72088	10- 1-09	Thos. Ryan	Burlington	14.2	9.4	4.8	Dirty	Sediment and hairs in bottle.
72090	"	J. J. Childs	"	11.2	9.1	2.1	Very dirty	Hairs and dirt floating on milk, and below standard chemically.
72110	"	Geo. Saiger	"	13.3	8.9	4.4	" "	Hairs and sediment in bottle.
73134	11- 2-09	J. & T. Flood	Bennington	12.97	9.17	3.8	Extremely dirty	Large amount of dirt, hairs, and other extraneous matter.
73135	"	H. H Harmon	"	4.19	2.49	1.7	" " "	Refractometer 23.0. Watered.
72985	10-29-09	Frank Norton	Fair Haven	for	typhoid			No typhoid found by Jackson Hesse method.
73568	11-10-09	Chas. F. Whitney	Hardwick	14.6	9.6	5.0	Dirty	
73570	"	Geo. Cummings	"	14.0	9.4	4.6	"	
73572	"	Ed. Bridgeman	"	13.7	9.5	4.2	"	
73573	"	W. S. Perry	"	(17.0)	(10.0)	(7.0)	Very dirty	Much sediment at bottom, and particles floating at top.
73574	"	Ed. Gove	"	14.7	9.7	5.0	Dirty	
73624	11-11-09	Carroll Munn	Johnson	14.6	9.8	4.8	"	
73627	"	Morris Hill	"			8.2	"	Top sample—unmixed.
74238	11-18-09	W. B Sykes	Dorset	15.5	9.2	6.3	"	" " "
75633	12-15-09	W. B. Bradford	Bennington	12.4	10.3	2.1	"	Skimmed.
75864	12-17-09	P. J. O'Connor	Hartford	14.7	9.9	4.8	"	Much sediment
75865	"	"	"	13.7	9.9	3.8	"	" "
76481	12-30-09	Fred Hazen	Alburgh	10.4	7.5	2.9	Refractometer low	Contains added water.

Total, 18.

Digitized by Google

Milk—Standard or Above

Specimens Examined at the Laboratory of Hygiene during Last Quarter, 1909

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
72079	10- 1-09	Steele & Butler	Burlington	12.6	9.3	3.3	Normal	
72080	"	C. C. Bliss	"	13.3	9 3	4.0	"	
72081	"	L. E. Haynes	"	13.6	9.6	4.0	"	
72078	"	Steele & Butler	"	13.9	9.1	4.8	"	
72087	"	T. B Calkins	"	14.5	9.1	5.4	"	Top Milk.
72089	"	C. K. Tyler	"	14.1	9.5	4.6	"	
72091	"	F. L. Murray	"	13.8	9.2	4.6	"	
72092	"	I E. Chase	"	13.5	9.2	4.3	"	Lamson, producer. [ple.
72093	"	" "	"	14.4	9.4	5.0	"	E. Goodrich, producer. Top sam-
72094	"	" "	"	Cream		26.0		
72095	"	E. R. Rockwell	"	13.0	9.2	3.8	Normal	Moseley, producer.
72096	"	F. L. Murray	"	Cream		28.0		
72097	"	Wm. Suckstorff	"	13.9	9.3	4.6	Normal	Tilley, producer.
72098	"	" "	"	13.0	9.3	3.7	"	
72099	"	" "	"	Cream		50.0		Excellent quality.
72100	"	E. Bordo	"	12.7	8.5	4.2	Normal	
72101	"	Millham & Son	"	14.2	9.4	4.8	"	
72102	"	Thos. Ryan	"	12.6	8.8	3.8	"	Can.
72103	"	J. B. Ritchie	"	13.7	9.1	4.6	"	Stewart, producer.
72104	"	" "	"	13.1	8.8	4.3	"	T. T. Wheeler, producer.
72105	"	Patnode & Farrell	"	13.1	9.1	4.0	"	
72106	"	T. P. Welch	"	13.0	9.0	4.0	"	
72107	"	" "	"	14.0	9.1	4.9	"	Bishop Hall Farm.
72108	"	Bostwick Bros	"	13.1	9.0	4.1	"	H. R. Thomas, producer.
72109	"	J G. G. Downing	"	14.2	9.4	4.8	"	Catlin, producer.
72111	"	Anctill & Beauleau	"	13.9	8.9	5.0	"	McCale, "
72860	10- 8-09	H. C. Blake	St. Albans	Cream		38.0		
72865	"	R. A. Warner	"	13.0	8.8	4.2	Normal	
72866	"	J. N. Warner	"	12.7	8.8	3.9	"	
72867	"	C. M. Bell	"	13.1	9.1	4.0	"	
72868	"	L. W. Campbell	"	13.4	9.0	4.4	"	
72869	"	Sweeney Grocery Co	"	Cream				Broken when received.
72870	"	E. H. Brooks	"	13.1	8.7	4.4	Normal	
73569	11-10-09	Russell Holton	Hardwick	12.7	8.9	3.8	"	
73571	"	Geo. C. Trow	"	13.3	9.4	3.8	"	
73575	"	H. Powers	"	13.8	9.7	4.1	"	
73576	"	Alec Parks	"	16.3	10.1	6.2	"	Top sample, unmixed.
73577	"	W. S. Farr	"	13.6	9.4	4.2	"	
73695	11-11-09	Homer W. Peck	Johnson	14.4	9.9	4.5	"	
73696	"	B. S. Fullington	"	14.7	9.9	4.8	"	

Digitized by Google

MILK—STANDARD OR ABOVE—(Continued)

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks.
73687	11-12-09	W. S. Farr	Hardwick	13.1	9.1	4.0	Normal	
74087	11-19-09	Chas. Vastering	Jericho	14.0	9.2	4.8	"	
74239	11-18-09	G. W. Edgerton	Dorset	12.7	9.1	3.6	"	
74240	"	Chas. Lee	"	14.1	9.1	5.0	"	
74706	11-27-09	H. H. Ray	Burlington	13.7	9.5	4.2	"	Harrington, producer.
74707	"	"	"	14.5	9.7	4.8	"	Thorp, "
74708	"	"	"	15.0	9.7	5.3	"	Spear & Palmer, producers
74709	"	"	"	15.5	9.7	5.8	"	Perigo, producer.
74711	"	"	"	Cream		34.0	"	Webster, "
75634	12 15 09	L. J. Archambault	Enosburg Falls	12.0	8.6	3.4	"	Rather poor quality.
75694	12 16 09	———	Rutland	13.0	9.6	3.4	"	
75696	12 17 09	G. W. Pearson	Waterbury	13.0	9.4	3.6		
75827	"	L. M. Graves	"	13.1	9.5	3.6		
75828	"	H. E. Hazelton	"	14.8	9.9	4.9		
75829	"	F. F. Fuller	"	12.2	9.6	3.6		
75830	"	S. M. Stearns	"	15.4	9.6	5.8		
75831	"	G. V. Crossett	"	14.2	9.6	4.6		
75832	"	J. S. Sweet	"	14.3	9.4	4.9		
75833	"	F. X. Ladoux	"	14.9	9.7	5.2		
75834	"	R. J. Barber	"	13.3	9.1	4.2		
75835	"	W. Woodward	"	12.7	8.5	4.2		
75836	"	A. I. Torrey	"	13.7	9.5	4.2		
75837	"	L. Russell	"	13.0	9.0	4.0		
75838	"	B. R. Demerritt	"	13.7	9.5	4.2		
75839	"	Moody & Woodward	"	11.8	8.4	3.4	Collected for Vermont Condensed Milk Co., Richmond	
75840	"	J. W. Preston	"	14.0	10.0	4.0		
75841	"	W. J. Howland	"	13.4	9.8	3.6		
75842	"	L. S. Town	"	12.6	9.1	3.5		
75843	"	W. W. Shipley	"	13.9	9.7	4.2		
75844	"	G. E. Moody	"	13.1	9.1	4.0		
75845	"	S. Baird	"	14.0	9.9	4.1		
75846	"	J. R. Arkley	"	13.7	9.7	4.0		
75847	"	F. W. Powers, farm	"	13.6	9.5	4.1		
75848	"	" " home place	"	13.6	9.4	4.2		
75849	"	J. E. Greene	"	13.5	9.5	4.0		
75850	"	M. Hill	"	13.7	9.7	4.0		
75851	"	H. F. Hill	"	13.9	9.7	4.2		
75852	"	C. A. Wright	"	12.5	9.0	3.5		
75853	"	J. Pixley	"	14.0	9.7	4.3		
76244	12 23-09	John Webber	Bennington	14.0	9.1	4.9	Normal	

Digitized by Google

Milk—Standard or Above—(Continued)

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
76282	12-25-09	L. H. Gale	So. Londonderry	13.7	9.5	4.2	Normal	
76283	"	Melendy Bros.	" "	14.4	9.8	4.6	"	
76284	"	A. L. Warner	Londonderry	15.3	9.3	6.0	"	
76285	"	C. L. Wright	"	13.7	9.4	4.3	"	
76286	"	D. W. Marden	"	15.1	9.9	5.2	"	
76265	"	Chas. Chesley	Glover	14.05	9.25	4.80	"	
76488	12-31-09	C. Ladabouche	Proctor	14.2	9.8	4.4	"	
76489	"	W. Sharp	"	13.6	9.5	4.1	"	
76490	"	Jos. Henry	"	13.8	9.5	4.3	"	
76491	"	JohnStone	"	13.5	9.5	4.0	"	
76492	"	R C. Mead estate	"	14.2	9.6	4.6	"	
76478	"	D M. Johnson	Essex Junction	14.7	10.0	4.7	"	
76479	"	W. R Place	" "	14.1	9.8	4.3	"	
76480	"	H. D. Drury	" "	16.0	10.5	5.5	"	

Total, 94.

Digitized by Google

Foods

Specimens Examined at Laboratory of Hygiene during Last Quarter, 1909

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
72167	10- 4-09	Sugar Vinegar	Submitted by Star Grocery Co., Richford	Holbrook Grocery Co., Keene, N. H.	1			No adulteration detected.
72359	10- 9-09	Milk	Submitted by C. M. Campbell, Rochester		1			Microscopically normal.
72229	10- 6-09	Turmeric	Submitted by C. A. Perry, H. O., Readsboro		1			No adulteration detected but poor quality.
72455	10-18-09	Cream	Submitted by Frank Louge, Westford		1			Fat 32.0 per cent.
72248	10- 6-09	Milk	" " E. J. Viens, Burlington			1		Skimmed.
72249	"	"	" " J. A. Dow, Brandon			1		Dirty.
72372	10- 9-09	"	" " Sidney Warren, Williston		1			
72595	10-21-09	Beef Liver	Submitted by H. W Barrows, Stowe.					Tubercular.
72977	10-27-09	Milk	" " C. L. Greene, Burlington		1			
73565	11-10-09	Tissue from Calf	" " H. W. Barrows, Stowe.					Tubercular.
72308	10- 7-09	Health Brand Potato Flour	W W. Morton, Randolph	Scandinavian Importing Co., Boston.	1			No adulteration detected.
72305	"	Harris Raspberry Extract	" " "	F. E. Harris. Binghamton, N. Y.			1	Label not in proper form.
72306	"	Thepure Lemon "	" " "	McAndrews, Portland, Me.		1		Lemon oil 4.4 per cent.
72307	"	Boned Chicken	" " "	Richardson & Robbins.	1			Net weight 7½ oz. Good quality.
72308	"	Golden Shield Baking Powder	" " "	Munroe Co. Chem. Co., Fairport, N. Y.			1	Names of ingredients not on label.
72309	"	Baking Soda	" " "	Bulk.	1			No adulteration detected.
72310	"	Cream Tartar	" " "	Bulk.	1			No adulteration detected.
72311	"	Rae's Lucca Oil	" " "	S. Rae & Co., Leghorn	1			No adulteration detected.
72313	"	Crab Apple Jelly	C. F. Stevens, "	Mrs. A. Vicars, Bethel	1			No adulteration detected.
72314	"	Beef Extract	" " "	Armour & Co.	1			
72315	"	America Red Raspberries	" " "	Kidwell Bros., Baltimore	1			Net weight. 12 oz. Rather low grade.
72316	"	Senorita Sardines	" " "	"Sardines a l'Huile d'Olive pure"			1	Packed in cotton seed oil.
72317	"	Puritanated Coffee	" " "	Clark, Coggin & Johnson, Boston.	1			
72318	"	Frigate Sardines	" " "		1			Excellent small fish in pure olive oil.
72319	"	Purity California Olive Oil	" " "		1			No adulteration detected
72320	"	Cream Tartar	" " "	Stickney & Poor	1			Pure. Full weight.
72321	"	" "	" " "	Bulk.	1			Pure.
72322	"	Synthetic Banana Extract	" " "	Schotterbeck & Foss Co., Portland, Me.	1			An imitation, correctly labeled.
72323	"	Peach Extract	" " "	Baker Extract Co., " "	1			An imitation, correctly labeled.

Digitized by Google

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
72934	10- 7-09	Lemon Extract	C. F. Stevens, Randolph	Baker Extract Co., Portland, Me.	1			Lemon oil 6.4 per cent.
73688	11-12-09	Milk	Submitted by T. Ryan, Burlington		1			No evidence of added water.
73757	11-14-09	Pork	" " G. H. Dill, Beldens					No parasites present.
73736	11-13-09	Milk	" " T. Ryan, Burlington		1			No evidence of added water.
72804	10- 7-09	Lemon Extract	W. W. Morton, Randolph	C. L. Cotton Perfume and Extract Co., Earlville, N. Y			1	Artificial color not stated.
72933	10-27-09	Blooker's Powdered Cocoa	Badlam & Cole, Rutland		1			No adulteration detected.
72931	"	Phillips' Digestible "	" " "	C. H. Phillips Chemical Co., N. Y	1			No adulteration detected.
72935	"	Epps' Cocoa	" " "	Jas. Epps & Co., London	1			"Filled" with arrowroot as labeled.
72936	"	Premier Grape Jam	" " "	Francis Leggett & Co., N. Y	1			No adulteration detected.
72937	"	Honey	" " "	Bishop & Co., Los Angeles, Cal	1			Natural.
72938	"	Sultana Raisins	" " "	Francis Leggett & Co., N. Y.	1			No adulteration detected
72939	"	Instantaneous Chocolate	" " "	S. F. Whitman & Son, Philadelphia	1			No adulteration detected.
72940	"	Maxim Boneless Sardines	" " "	"Packed in Portugal"	1			10 medium sized boneless fish in olive oil.
72941	"	Ikerloen " "	" " "	Andre Ikerloen, Douarney, France	1			Excellent quality fish in olive oil.
72942	"	Wintergreen Extract	" " "	Jos. Burnett Co., Boston	1			Excellent quality.
72943	"	Peppermint "	" " "	" " " "	1			Excellent quality.
72944	"	Lemon "	" " "	Schotterbeck & Foss Co., Portland, Me.	1			Excellent quality lemon oil 8.7 per cent.
72945	"	Cream Tartar	" " "	D. & L. Slade Co., Boston	1			Pure potassium bitartrate.
72948	"	Imitation Pistachio Flavoring	" " "	Jos. Burnett Co., Boston	1			Label in correct form.
72949	"	Premier Strained Honey	" " "	Francis Leggett Co., N. Y	1			Natural.
72950	"	Cordon D'Argent Olive Oil	" " "	John Chapman & Co., N. Y	1			No adulteration detected.
72951	"	Suchard Chocolate	" " "	"23 Worth St., N. Y."	1			Excellent quality.
72952	"	Superlative Terpeneless Lemon	John Dunn, "	"John Dunn, Rutland"			1	Label not in proper form.
72953	"	" Vanilla Extract	" " "	" " " "	1			Passed.
72954	"	Artificial Strawberry Extract	" " "	Van Duzer Extract Co., N. Y	1			Passed.
72955	"	Lemon Extract	" " "	Jos. Burnett Co., Boston	1			Lemon oil 10 per cent, excellent quality.
72957	"	Strained Honey	" " "	J. E. Crane & Son, Middlebury, Vt	1			Natural.
72958	"	Superlative Baking Soda	" " "	Dudley & Co., Fairport, N. Y	1			No adulteration detected.
72959	"	" Cream Tartar	" " "	"John Dunn, Rutland"	1			No adulteration detected.
72960	"	Blue Sea Tuna in Olive Oil	" " "	California Fish Co., Los Angeles, Cal			1	Packed in cotton seed oil.
72962	"	Maxim Brand Boneless Sardines	" " "	"Packed in Portugal"	1			Good quality boneless fish in olive oil.
72963	"	Casino De Paris Sardines	" " "		1			12 medium sized fish in olive oil.

Digitized by Google

Foods (Continued)

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
72964	10-27-09	Black Hawk Am. Smoked Sardines	John Dunn, Rutland	Sea Coast Canning Co., Eastport, Me.	1	..	..	6 large smoked fish of fair quality in cotton seed oil.
72965	"	Marin Brand Olive Oil	" " "	John M. Chapman Co., N. Y.	1	..	..	No adulteration detected.
74062	11-19-09	Cream	Submitted by H. H. Ray, Burlington.		1	..	..	Fat 40.0 per cent.
74686	11-27-09	Pork	Itha Shepard, Bristol.		..	..	..	Normal.
72946	10-27-09	Nabob Vanilla Extract	Badlam & Cole, Rutland	Francis Leggett & Co., N. Y.	1	..	..	No adulteration detected.
72947	"	Premier " "	" " "	" " " "	1	..	..	No adulteration detected.
72956	"	Good Value Peppermint	John Dunn, "	"State and Lewis Sts., Binghamton, N. Y."	1	..	..	Correctly labeled.
72961	"	Gem Baking Powder	" " "	Warner Baking Powder Co., N. Y.	1	..	..	Over 10 per cent CO_2. Full weight.
73451	11- 7-09	Slade's Cream Tartar	O. S. Frost, "		1	..	..	Pure potassium bitartrate.
73452	"	Teissier Sardines	" " "	Wm. Underwood Co., Boston	1	..	..	14 good quality fish in cotton seed oil.
73453	"	Cotton's Wintergreen	" " "	C. L. Cotton Perfume and Extract Co., Earlville, N. Y.	1	..	..	Label in correct form.
73454	"	White Cross Lemon Compound	" " "	Moshier Bros., Hopkinton, Mass	1	..	..	An imitation correctly labeled.
88455	"	Gem Baking Powder	H. E. Seward & Sons, Rutland	Warner B. P. Co., New York	1	..	..	Over 10 per cent CO_2. Full weight.
73456	"	Marble City Baking Powder	" " " "		1	..	..	Over 10 per cent CO_2. Full weight.
73457	"	Keystone Lemon Extract	" " " "	C. L. Cotton Perfume and Extract Co., Earlville, N. Y.	1	..	..	Lemon oil 5.1 per cent.
73458	"	Anchor Mills Castor Oil	" " " "	Anchor Mills Co., Charlestown, Mass.	1	..	..	No adulteration detected.
73459	"	" " Wintergreen Extract	" " " "	" " " " "	1	..	..	No adulteration detected.
73460	"	Colonial Lemon Extract	" " " "	Colonial Manufacturing Co., Detroit	1	..	..	Lemon oil 6.1 per cent.
73992	10-17-09	Lard	H. B. Slack, Vergennes		1	..	..	
73993	"	Advance Compound (Lard)	" " "	Schwartzchild & Sulzberger, Chicago	1	..	..	Correctly labeled.
73994	"	Vanilla Extract	" " "	C. L. Cotton Perfume and Extract Co., Earlville, N. Y.	1	..	..	No adulteration detected.
73995	"	Evaporated Milk	" " "	Van Camp Packing Co.	1	..	..	
73996	"	Honey	" " "	Griggs Bros. & Nichols, Toledo, O.	1	..	..	Natural.
73997	"	Crossed Fish Norwegian Sardines	" " "	Stavanger Preserving Co., Norway	1	..	..	27 small fine quality fish in pure olive oil.
73998	"	Comp. Glucose Preserv. Blackberry	" " "	W. W. Vaughan Co., Detroit	1	..	..	Correctly labeled.
73999	"	" " " Pineapple	" " "	" " " "	1	..	..	Correctly labeled.
75028	12- 3-09	Pork	E. K. Eddy, Starksboro		..	..	..	Normal.
75150	12- 5-09	Beef Liver	H. W. Barrows, Stowe		..	..	..	Tubercular.
75218	12- 7-09	Pork	James Gill, New Haven		..	..	..	Normal.

Digitized by Google

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
75229	12- 7-09	Pork, No. 1	G. H. Dill, Beldens		..	..	..	Normal.
75233	"	" No. 2	" " "		..	..	..	Normal.
74955	12- 2-09	Honey	Submitted by David Blair, Warren		1	..	..	No adulteration detected.
75622	10-22-09	Milk	" " H. B. Shaw, Burlington		1	..	..	
75623	"	"	" " " " "		1	..	..	
75439	12-10-09	"	" " H. H. Ray, "		1	..	..	
75619	12-15-09	Pork (Sprague)	F. H. Palmer, Bristol		..	..	..	Normal.
75632	"	Cream	Submitted by A. W. Hill, Burlington		1	..	..	Normal.
75711	12-16-09	Milk	" " H. H. Ray, "		1	..	..	Normal.
75712	"	"	" " " "		..	1	..	Tainted.
75853	12-18-09	"	" " R. J. Goss, Wilder		1	..	..	Normal.
75928	12-20-09	"	" " H. H. Ray, Burlington		..	1	..	Normal.
75776	12-17-09	"	" " W.W. Lamoureux, Burlington		..	1	..	Tainted.
74315	11-22-09	Pure Honey	G. E. Marshall, Middlebury	J. E. Crane & Son, Middlebury	1	..	..	No adulteration detected.
74316	"	Challenge Condensed Milk	" " "	Borden's Condensed Milk Co., N. Y.	1	..	..	
74317	"	Royal Luncheon Cheese	" " "	Royal Cheese Co., Detroit	1	..	..	
74318	"	Teal Brand Muscatel Raisins	" " "	California Fruit Canners' Association, Fresno, Cal	1	..	..	True to name.
74319	"	Beardsley's Shredded Codfish	" " "		1	..	..	
74320	"	Harbor Brand Sardines	" " "	Jed Frye & Co., N. Y	1	..	..	12 medium quality fish in cotton seed oil.
74321	"	Eglantine Sardines	" " "	"Portugal"	1	..	..	10 good sized fish in olive oil.
74322	"	Boneless "	" " "	G. Triat & Co., Douarney, France	1	..	..	12 excellent boneless fish in olive oil.
74323	"	Food Color	" " "	Chris. Hansen Laboratories, Little Falls, N. Y	..	..	1	Not correctly labeled.
74324	"	Orange Extract	" " "	Burnett, Boston	1	..	..	Orange oil 8.9 per cent. Excellent quality.
74326	"	Almond "	" " "	Stickney & Poor, Boston	1	..	..	No adulteration detected.
74328	"	Candy	" " "	Schraft, Boston	1	..	..	No adulteration detected.
74329	"	Howard Chocolates	" " "	Sparrow, "	1	..	..	No adulteration detected.
74330	"	Candy, Mixed	" " "	Currier Bros., Leominster, Vt	1	..	..	No adulteration detected.
74331	"	" " "	" " "	" " " "	1	..	..	No adulteration detected.
74332	"	" " "	" " "	American Confectionery Co., Boston	1	..	..	No adulteration detected.
74333	"	" " "	" " "	Arbuckle Co., Burlington	1	..	..	No adulteration detected.
74334	"	Lemon Extract, Bulk	" " "	Squires, Sherry & Galusha, Troy, N.Y.	..	1	..	Lemon oil 2.2 per cent.
74335	"	Cheese	" " "	Farmingdale Cheese Co., Salisbury	1	..	..	
74336	"	Currant Jelly	" " "	Ayer Preserving Co., Ayer, Mass.	..	..	1	An imitation not properly labeled.

Digitized by Google

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
74337	11-22-09	Gage Plum Preserves	G. E. Marshall, Middlebury	Cruikshank Bros. Co., Alleghany, Pa.	1			No adulteration detected.
74338	"	Blackberry "	" " "	" " " " "	1			No adulteration detected.
74342	"	Lard	W. J. Wood, "		1			No adulteration detected.
74345	"	Newport Green Tea	" " "	M. L. Hall Co., Boston	1			No adulteration detected.
74346	"	Mince Meat	" " "	Columbia Conserve Co., Indianapolis	1			
74348	"	Flag Brand Red Cherries	" " "	Fort Stanwix Canning Co.	1			
74349	"	Monadnock Sardines	" " "	Holbrook Grocery Co., Keene, N. H.	1			18 good quality fish in olive oil.
74350	"	Lion Brand Sardines in cotton seed oil	" " "	Independent Canning Co., Eastport, Me.	1			9 small fish in cotton seed oil, rather poor.
74351	"	Olive Oil	F. W. Beckwith, "	L. A Price, Bordeaux, France	1			No adulteration detected.
74352	"	California Olive Oil	" " "	Bishop & Co., Los Angeles, Cal.	1			No adulteration detected.
74353	"	Cheese	" " "	Farmingdale Cheese Co., Salisbury	1			
74354	"	"Pure Cream" Soda	" " "	Dudley & Co., Fairport, N. Y.	1			No adulteration detected.
74355	"	Moosalamoo Blend Coffee	" " "		1			No adulteration detected.
74356	"	Gold Star Cream Tartar	" " "	Berry Hall Co., Burlington	1			No adulteration detected.
74357	"	Empress Comp. Lemon	" " "	"New York"			1	An imitation not properly labeled.
74358	"	Republic Vanilla Extract	" " "	Austin Nichols & Co., N. Y.	1			No adulteration detected.
74359	"	Dandelion Brand Butter Color	" " "	Wells Richardson Co., Burlington	1			
74360	"	Extracted Honey	" " "	H. J. Manchester & Son, Middlebury	1			No adulteration detected.
74361	"	Zeno Norwegian Sardines	Gorham & Sons, "	"Stavanger Norway"	1			19 fish, fair quality, in olive oil.
74370	"	Peneros Sardines	" " "	G. Peneros, L'Isle Tristan, France	1			18 excellent boneless fish in olive oil.
74372	"	Talisman Codfish	" " "	"Gloucester, Mass"	1			
74374	"	None Such Mince-meat	" " "		1			
74375	"	Malt Breakfast Food	" " "	Malted Cereals Co., Burlington	1			
74376	"	Brillat Brand Olive Oil	" " "	La Maura, Azema & Farinan, N. Y.	1			No adulteration detected.
74438	11-23-09	Lemon Extract	R. S. Benedict, "	McMonagle & Rogers, Middletown, N. Y.	1			Lemon oil 6.7 per cent.
74439	"	" " "	" " "	Bicknell & Palmer, Bristol, Vt.			1	Standard in oil but artificially colored.
74440	"	10 Cent Lemon Extract	" " "	R. T. French Co., Rochester, N. Y.			1	An imitation improperly labeled.
74442	"	Bartoni Brand Olive Oil	" " "	"Product of Italy"	1			No adulteration detected.
74443	"	Maraschino Cherries	" " "	R. C. Williams Co., N. Y.	1			Preserved and colored as labeled.
74444	"	Extracted Honey	" " "	H. J. Manchester & Son, Middlebury	1			No adulteration detected.

Digitized by Google

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
74446	11-23-09	Royal Scarlet Norwegian Sardines	R. S. Benedict, Middlebury	R. C. Williams Co., N. Y.	1			24 small good quality fish in olive oil.
74449	"	Falstaff Boneless "	" " "	"Portugal"	1			9 large boneless fish in olive oil.
74450	"	Candy, mixed	" " "	Kibbe Bros., Springfield, Mass.	1			No adulteration detected.
74451	"	" "	" " "	" " " "	1			No adulteration detected.
74452	"	" "Tootsies"	" " "		1			Paraffine absent.
74453	"	"Benedict's Pride" Soda	" " "	Dudley & Co., Fairport, N. Y.	1			No adulteration detected.
74454	"	Canada Style Prime Cheese	" " "	McLaren Imperial Cheese Co., Detroit	1			
74455	"	Cheese	" " "	Orwell Factory	1			
74456	"	Royal Scarlet Cocoa	" " "	R. C. Williams Co., N. Y.	1			No adulteration detected.
74457	"	Cream Tartar	" " "	E. R. Durkee & Co., N. Y.	1			No adulteration detected.
74458	"	Yo San Pineapple in Syrup	" " "	"Packed in Singapore"	1			
74459	"	Royal Scarlet Orange Marmalade	" " "	R. C. Williams & Co., N. Y.	1			
74460	"	Tiger Seeded Raisins	" " "	Rixford Packing Co., Fresno, Cal.	1			
74461	"	K. C. Baking Powder	" " "	Jacques Mfg. Co., Chicago	1			More than 10 per cent available CO_2.
74462	"	Dairy Butter	F. Shackett, "		1			No adulteration detected
74463	"	Process "	" "	Swift & Co., Chicago	1			
74464	"	Pure Lard	" "		1			No adulteration detected.
74465	"	Snow Cap Codfish	" "		1			
74327	11-22-09	Wintergreen Extract	G. E. Marshall, "	McCormick & Co., Baltimore	1			
74340	"	Icefros	" " "	W. F. Childs Co., Boston	1			Passed.
74343	"	Old Home Boiled Cider	W. J. Wood, "	Vermont Fruit Co., Bellows Falls	1			No adulteration detected.
74344	"	Bologna Sausage	" " "		1			Passed.
74347	"	Tri-Cod Fish Cake	" " "	Chas. Wonson & Co., Gloucester, Mass.	1			
74371	"	Sirloin Cut Codfish	Gorham & Sons, "	Lord Bros. Co., Portland, Me.	1			Excellent quality.
74373	"	Gilded Dome Cubed Codfish	" " "	Pierce, Austin, Caswell, Livermore Co., Boston	1			
74437	11-23-09	Lemon Extract—bulk	R. S. Benedict, "				1	Contains no oil of lemon.
74441	"	Victor Lime Juice	" " "	Simpson Spring Co., South Easton, Mass	1			No adulteration detected.
75804	12-17-09	Lemon Extract	C. I. Hatch & Co., Waterbury		1			Lemon oil 5.4 per cent.
75805	"	Olive Oil	" " " "	Burlington Drug Co., Burlington			1	Contains cotton seed oil.
74339	11-22-09	Cherry Preserves	G. E. Marshall, Middlebury	Cruikshank Bros.	1			

Adulterated, 7
Misbranded, 13
Legal..... 164

Digitized by Google

SPECIMENS EXAMINED AT LABORATORY OF HYGIENE DURING LAST QUARTER, 1909

Laboratory Number	Date	Article	Obtained From	Manufacturer or Wholesaler	Legal	Adulterated	Misbranded	Remarks.
72295	10- 7-09	Disinfective Soap	C. F. Stevens, Randolph	Disinfective Co., Canton, O.	..	..	1	Extravagant statements on label not borne out by tests.
72312	"	Castor Oil	W. W. Morton, Randolph	Twitchell Champlin Co., Portland, Me.	1	..	..	No adulteration detected.
75900	12-17-09	Dr. Rand's Celery Remedy	C. I. Hatch & Co., Waterbury	J. F. Bauer Co., Mt. Morris, N. Y.	..	..	1	Misleading statements on label.
75901	"	Dr. Wood's Norway Pine Syrup	" "	Foster Milburn Co., Buffalo, N. Y.	..	..	1	Misleading statements on label.
75902	"	Bromo Caffeine	" "	Keasbey & Mattison, New York City.	1	..	..	
75903	"	Adamson's Botanic Cough Balsam	" "	F. W. Kinsman & Co., Augusta, Me.	..	..	1	Misleading statements on label.
75905	"	Dr. Porter's Healing Oil	" "	Paris Med. Co., St. Louis	1	..	..	
75904	"	Kennedy's Honey and Tar	" "	E. C. DeWitt & Co., Chicago	..	..	1	Misleading statements on label.
75906	"	Rydale's Cough Elixir	" "	Rydale Remedy Co., Newport News, Va.	1	..	..	
75907	"	Shiloh's Consumption Cure	" "	S. C. Wells & Co., Le Roy, N. Y.	..	..	1	Misleading statements on label.
75895	"	Thayer's Headache Powders	" "		..	..	1	Acetanilid not stated on label.
75899	"	Wadsworth's Vegetable Croup Syrup	" "	H. H. Burrington, Providence, R. I.	1	..	..	
71874	9-24-09	Dr. Warner's Headache Powders	W. R. Warner & Co., Vergennes		1	..	..	
71875	"	Dr. Warner's Headache Tablets	" "		1	..	..	
75789	12-14-09	Prescription	Submitted by G. J. Kelly, W. Derby		1	..	..	No wood alcohol or croton oil.
72695	10-29-09	Hair Tonic	Submitted by Miss O. L. Howe, Burlington		1	..	..	
75896	12-17-09	Spirits Camphor	C. I. Hatch & Co., Waterbury		1	..	..	117% U. S. P. strength.
75897	"	Tincture Iodine	" "		1	..	..	Conforms to U. S. P. standard.
75898	"	Formalin	" "		1	..	..	38.8% formaldehyde gas.

Digitized by Google

Medico-Legal Cases

Specimens Examined by Order of Superior Judge or the Attorney General, Oct. 1, 1909, to Dec. 31, 1909.

Laboratory Number	Date Received	Date Reported	Town	Material	Examined For	Result	Ordered by	State's Attorney
			Caledonia County					
72898	10-19-09	10-21-09	Hardwick	Examination of body	Cause of death	Suicide by shooting	J. G. Sargent.	Simonds
72986	10-28-00	10-30-09	"	Autopsy	" " "	Railroad injury		
73187	10- 2-09	10- 5-09	St. Johnsbury	Liquor	Alcoholic content	Case pending	J. G. Sargent.	Simonds
73188	"	"	"	"	" "	" "	"	"
73335	11- 9-09		"	Organs of Infant	Cause of death	Not examined		"
			Chittenden County					
72909	12-17-09	12-18-09	Burlington	Autopsy	Cause of death	Acute dilatation of heart	Sargent	H. B. Shaw
			Franklin County					
73086	11-16-09	11-22-09	St. Albans	Human organs	Poison	Arsenic present	A. A. Hall	E. Johnson
			Lamoille County					
72909	12- 6-09	12-17-09	Jeffersonville	Organs of dog	Poison	Case pending	A. A. Hall	Maurice
			Orleans County					
73064	11-16-09	11-19-09	No. Craftsbury	Bottle liquid	Poison	Negative	J. G. Sargent.	Wright
			Rutland County					
72447	10-14-09	10-16-09	Wallingford	Autopsy	Cause of death	Case pending in court	J. G. Sargent.	J. C. Jones
72448	"	"	"	Uterus and adnexa	Injury	" " " "	" "	" "
72449	"	"	"	Swabs from vagina	Spermatozoa	" " " "	" "	" "
72450	"	"	"	Undervest and drawers	Evidence of violence	" " " "	" "	" "
72590	10-16-09	10-18-09	"	Larynx and trachea	Injury	" " " "	" "	" "
72591	"	"	"	Board	Spermatozoa	" " " "	" "	" "
72559	10-19-09	10-19-09	"	Liquid in bottle	Alcohol	" " " "	" "	" "
74593	11-24-09	11-27-09	Rutland	Autopsy	Cause of death	Chronic alcoholism	" "	" "
74594	"	"	"	Kidney	Abnormal structure	Congested	" "	" "
74595	"	"	"	Liver	" "	"	" "	" "
74596	"	"	"	Lung	" "	"	" "	" "
74597	"	"	"	Brain	" "	Meningitis	" "	" "
74598	"	"	"	Heart	" "	Calcareous deposits	" "	" "
74599	"	"	"	Stomach	Alcohol	Positive	" "	" "
74600	"	"	"	Urine	"	"	" "	" "
			Windham County					
73628	11- 9-09	11-11-09	Bellows Falls	Autopsy	Cause of death	Case pending	J. G. Sargent.	C. H. Williams
73629	"	"	" "	Spleen	Poison	" "	" "	" "

Digitized by Google

Medico-Legal Cases—(Continued)

Laboratory Number	Date Received	Date Reported	Town	Material	Examined For	Result	Ordered by	State's Attorney
			Windham County					
73630	11- 9-09	11-11-09	Bellows Falls	Kidney	Poison	Case pending	J. G. Sargent	C. H. Williams
73631	"	"	" "	Uterus and contents	Pregnancy	" "	" "	" "
73632	"	"	" "	Stomach and duodeum	Poison	" "	" "	" "
73633	"	"	" "	Part of lung	Tuberculosis	" "	" "	" "
73634	"	"	" "	Swabs	Septic Infection	" "	" "	" "
73706	11-12-09	11-13-09	" "	Vial	Poison	Blue ink	" "	" "
73707	"	"	" "	Package white crystals	"	Sugar	" "	" "
73708	"	"	" "	" dried leaves	"	Senna	" "	" "
73709	"	"	" "	" blue crystals	"	Too small quantity	" "	" "
			Windsor County					
73930	11-15-09	11-17-09	Springfield	Autopsy	Cause of death	Acute alcoholism and sepsis	J. G. Sargent	E. A. Buck
73931	"	"	"	Stomach	Poison	Alcohol present	" "	" "
73932	"	"	"	Kidneys	"	Negative	" "	" "
73933	"	"	"	Cæcum and contents	"	"	" "	" "
73934	"	"	"	Heart	Abnormal structure	"	" "	" "
73935	"	"	"	Liver	Poison	"	" "	" "
73936	"	"	"	Portion right lung	Pathological structure	"	" "	" "
73937	"	"	"	Swabs	Septic Infection	Bacilli malignant œdema	" "	" "
73938	"	"	"	3 bottles Jamaica ginger	Poison	Negative	" "	" "
73939	"	"	"	2 plates	"	"	" "	" "
73940	"	"	"	Package powder	"	"	" "	" "
74916	11-30-09	12- 2-09	"	Autopsy	Cause of death	Bullet wounds	" "	" "
74917	"	"	"	Stomach	Alcohol	Negative	" "	" "
74918	"	"	"	Portion of mesentery	Bullet wounds	Positive	" "	" "
74919	"	"	"	Bullet (abdomen)	Identification	S. & W. 32 C. F.	" "	" "
74920	"	"	"	Bullet (back)	"	" " "	" "	" "

Digitized by Google

14.0979
Va b

GENERAL LIBRARY
UNIV. OF MICH.
JUN 18 1910

Bulletin No. 4, Volume X.

Issued Quarterly By

Vermont State Board of Health,

June 1, 1910.

Entered October 21, 1901, as second-class matter, Post Office at Brattleboro, Vt., under act of Congress of July 16, 1894.

CONTENTS.

Review of Some Recent Literature with Special Reference to Antityphoid Vaccination, the Hygiene of Medical Cases, Transmission of Disease by Insects, Antismallpox Vaccination, by George M. Kober, M. D., LL. D., Professor of Hygiene, Georgetown University, Washington, D. C. 3
Sewage Disposal, by Prof. J. W. Votey, Engineer of State Board of Health 11
Infectious Diseases, by David D. Brough, M. D., Inspector, Boston Health Department 23
The Ventilation of Public Buildings, by Prof. J. W. Votey, Sanitary Engineer of the Board 40
Tuberculosis, by J. H. Huber, M. D. 54
Specimens Examined at Laboratory of Hygiene, First Quarter, January, February and March, 1910 62
News Items 82

BRATTLEBORO, VT.

1910.

Digitized by Google

BULLETIN OF THE
VERMONT STATE BOARD OF HEALTH.

Vol. X. No. 4.
Issued Quarterly at Brattleboro, Vermont.

The Bulletin is published quarterly by the State Board of Health under the authority of Section 5 of Act No. 90, Legislature of 1900. It will be sent to all Boards of Health. A copy will be sent to any person in the state upon request addressed to the Secretary, Henry D. Holton, Brattleboro.

Digitized by Google

REVIEW OF SOME RECENT LITERATURE WITH SPECIAL REFERENCE TO ANTITYPHOID VACCINATION, THE HYGIENE OF MEDICAL CASES, TRANSMISSION OF DISEASE BY INSECTS, ANTISMALLPOX VACCINATION.

By George M. Kober, M. D., LL. D., Professor of Hygiene, Georgetown University, Washington, D. C.

During the last year or two much has been written on the subject of vaccination against typhoid fever, cholera and pest. Dr. Sterling Ruffin in an admirable review of Internal Medicine (Washington Medical Annals, '09, VIII. p. 77) described, in a most thorough manner, the character of infection of typhoid fever, its contagiousness, the chronic bacillus excretors and the prevention of typhoid fever by vaccination.

Major F. F. Russell of the Medical Corps U. S. A. in "The Military Surgeon" for June, 1909, discussed the prevention of typhoid fever by vaccination and by early diagnosis and isolation. His article, although written with special reference to the prevention of typhoid in the military service, is nevertheless of the utmost importance to public health. He points out, very properly, that in cities the diseases tend to diminish from year to year as sanitary conditions improve, but in the rural districts it remains just about the same, and that whenever troops take the field for active operation there is the greatest probability that the disease will become epidemic. He attributes this difference largely to the lack of suitable facilities for the collection and disposal of excreta and refuse. The army, he says, has tried many substitutes for water carriage of sewage and is now using an incinerator, which, while cumbersome and expensive, has proved very satisfactory. In Dr. Russell's opinion the question of the cost of incineration is perhaps unimportant when we consider the terrible pecuniary losses entailed by the prevalence of typhoid fever, dysentery, diarrhœal and other camp diseases. He quotes figures to show that the 31,000 cases of typhoid fever with 5877 deaths during the Boer War involved an expenditure of 4,000,000 pounds sterling. In the Spanish American War we had 20,730 cases with 1580 deaths among 120,000 men. In the Franco-Prussian War there were 73,396 cases with 8789 deaths among the German troops alone, and in the Civil War the Northern army had over 80,000 cases.

In view of the great economic importance of the subject no effort should be spared to prevent the ravages of this disease and Dr. Russell believes one of the simplest and most promising of these is antityphoid vaccination, which has already been subjected to extensive practical tests

Digitized by Google

fording relief in many situations in Vermont where soil of suitable character is found, as it can be operated the entire year. When the ground is frozen the temperature of the sewage is sufficient to thaw it so that the sewage can escape at the open joints of the tile. Such a system consists of a collecting tank into which the drain from the building discharges; an attached siphon chamber into which the sewage overflows from the collecting tank; an automatic siphon which discharges at intervals the contents of this chamber into a sewer leading to the lines of land tile through which the sewage escapes into soil. The land tile, usually of three-inch diameter, should be laid on lines carefully graded to ensure an even distribution of the sewage in the soil; they are laid at a sufficient depth below the surface—e.g. ten inches—to be undisturbed by the plow in case the land is cultivated; the joints are left open or uncemented to allow the escape of the sewage but covered sufficiently to prevent choking with dirt. Such a system properly constructed will generally keep in working order so long as neither the siphon nor tile becomes choked with grease or matters in suspension; to prevent this the collecting tank serves as an intercepting chamber by having both inlet and outlet pipes submerged. If the tile after a number of years' use is found to need cleaning, the cost is not great, owing to the slight depth at which it is laid. Sewage can, if necessary, be disposed of by this method in the vicinity of buildings as there is nothing visible but the tank covers and if these are tight there is no odor apparent. Simple, inexpensive arrangements on this plan can be made for handling the sewage of a single dwelling, as a farmhouse or a summer cottage, if local conditions are favorable; the siphon can be omitted and simple gates substituted to be operated by hand as occasion requires.

Attention should be called to the fact that in this, and practically all methods of sewage disposal, intermittency of application of the sewage is necessary for the bacterial action concerned in the transformation or purification of the sewage; the work of the aërobic bacteria cannot take place if the oxygen supply is cut off by the constant application of the sewage. A familiar example of this is the kitchen drain of the average farmhouse where the continued discharge of the drain in one place is sure to bring about a disagreeable condition which can usually be avoided by frequently shifting the point of discharge.

A third method of applying sewage to land is that well known under the name of intermittent filtration and commonly used in New England as a result of the experiments of the Massachusetts State Laboratory. The necessary conditions for this method are a convenient area of sandy or porous soil so located that the sewage can, if possible, be conducted to it by gravity and the expense of pumping be avoided. The area is prepared by such grading as may be necessary for the proper distribution of the sewage and is divided into a convenient number of units or beds, to each of which in rotation the sewage may be applied; underdrainage of

Digitized by Google

bedpans or inoculated by the nurses in rubbing the patients, and with the necessary precautions this complication did not develop further in his ward, though the infection still seemed to be about the hospital, for it appeared later in another part of the house. He relates similar observations concerning the transmission of furunculosis, bullæ, impetigo contagiosa and makes a strong plea for medical asepsis.

His precautionary measures in cases of pneumonia, tonsilitis, influenzal attacks and tuberculosis, with special reference to isolation, care of the mouth, collection and disposal of the sputum, care and disinfection of eating and drinking utensils, thermometers, tongue depressors, are of extreme practical importance. Speaking of tuberculous patients, while he considers it theoretically practicable to treat such patients in a general ward with entire safety to other patients, provided that the tuberculous patients intelligently and conscientiously follow orders, yet on account of the uncertainty of their doing so, he advocates isolation; for like reasons he would isolate cases of tonsilitis and pneumonia, and insists that pneumonic cases should under no circumstances be placed close to typhoid fever patients or those suffering from a very depressing disease. He describes a small ward epidemic caused by a pneumonia patient who, being delirious and spitting in all directions, infected the surrounding area of the ward. His faith in medical asepsis and partial or complete isolation has been materially strengthened, because since the introduction of his precautionary measures, he has seen no evidence of the transmission of pneumonia infections, except in one case—in which a patient with an unrecognized pneumonia had, in his absence, been placed for two days among the typhoid cases, and yet within these same years in the same wards two of his colleagues, who continued to mix their pneumonia with typhoid cases, had a rapid series of cases of lobar pneumonia in their typhoid cases. He has had no ward skin infections, no typhoid infections and no evidence of the transmission of severe diarrhœa, of typhoid fever cases, hemorrhage and perforations; indeed in 1907 in a total of 116 cases he had only one severe case and two very mild cases of hemorrhage and two perforations, one of the latter occurring in a convalescent. We quite agree with Dr. Edsall that while chance may have played a rôle, the system employed should be fairly credited with at least a part of the results.

Transmission of Disease by Insects.

A most excellent contribution has recently been made by Dr. L. O. Howard on "the economic loss to the people of the United States through insects that carry disease."

Bulletin 78, U. S. Department of Agriculture, March 18, 1909. In this monograph Dr. Howard considers the mosquito as the carrier of malaria and estimates that there are probably not less than 3,000,000 cases of malaria annually in the United States and upon a basis that one fourth of

Digitized by Google

department. However, the water commissioners agreed to care for the mains immediately after the fire was out and they did give the system a thorough flushing and we had no bad results.

Dr. Holton has stated that several towns have been granted permission by the State Board of Health to discharge their sewage into lakes or rivers. I don't know whether Newport has been so favored or not but we are using Lake Memphremagog as a place to discharge the sewage and I think West Derby, in part at least, is doing the same thing. We have no other place to dispose of our sewage and our lake is much larger than the one which has been referred to, but the greater part of the lake is situated in Canada. So far the Canadians have made no objection to the amount of sewage which comes from this side of the line and it seems to me that if they make no complaint and we have no ill results, we can do no better than continue. The disposal of sewage is perhaps one of the most serious problems which we are called upon to handle, coming next, in my judgment, to the supply of pure water. Heretofore, as has been said, this subject has been dealt with, with reference to large communities. Such plants as have been discussed here, would certainly bankrupt the small towns of Vermont. They are at the present time carrying about all they care to. The methods referred to at this meeting have been more practical and I assure Professor Votey that I am very grateful for his very interesting and able paper on this subject.

Dr. C. M. Campbell, Rochester, Vermont.

When we return to our homes, I wonder how many of us will be able to tell a progressive farmer, who wishes to put in a simplified sewage system, just how to go ahead and do it. I wonder how many of us could give the desired information without consulting an engineer and most of us do not live in large places where it is possible to consult engineers. If we could have a little concrete information as to just how to go to work to put in a settling tank, we would all appreciate the same.

Dr. H. D. Holton, Brattleboro, Vermont.

I have some pamphlets which describe the system and I shall be very glad to send one copy to any health officer who is interested enough to ask for one.

Prof. J. W. Votey, Burlington, closed the discussion.

Dr. Campbell asked for some information regarding a simplified sewage system which would be applicable to small towns and villages. I think this matter could be illustrated by a sketch, and as Dr. Holton offers to supply you with such material, I think all those interested should write to the Secretary for the sketch and such literature as he has on the subject. I think this will be much more satisfactory.

Digitized by Google

Dr. Whitaker spoke about using the village mains in case of fire and also pumping water from unsatisfactory streams into the mains when the water supply of the village was getting low. It is safer to keep the germs out of the village supply than it is to promise to give the mains a thorough flushing afterwards.

With regard to the effect of discharging sewage into the streams and injuring our neighbors, I will say that we have had illustrations before us a great many times. For instance there are the city of Lowell and the city of Lawrence on the Merrimac; one receives its supply of germs from New Hampshire and the other from the city of Berlin, Mass. When there is an outbreak of typhoid fever in the upper city, the same thing occurs in the lower city, within a certain number of days.

We have got to do something very soon to preserve our summer resorts so that the people who come into our state as well as our own people will be assured of pure water. Of course when cottages are built so they project over the water, that is complicating the matter. If we can not have proper drainage we must resort to pumping. A pump will throw the sewage to any desired height and it can be taken care of then. The water from a great many of our lakes is used as a public supply and this, of course, means serious injury to the people of our state.

Dr. Dalton asked what should be done to get rid of odors. I would fix my system of disposing of sewage so as not to have any odors at all. When you throw out sewage on the ground, never let it accumulate. You should select a portion of the premises which has a gradual slope so the sewage will not stand. If, however, you already have a foul smelling spot, spade it underneath and the bacteria of the soil will take care of it. Chloride of lime will remove any odor.

INFECTIOUS DISEASES.

By David D. Brough, M. D., Medical Inspector, Boston Health Department.

Of the problems that confront a health officer, that of infections is one of the most important. Error or incompetency in the other branches of health work may not be far-reaching. They may cause annoyance, not disaster. A correct diagnosis of infectious disease is of vital importance to a community. Error may lead to the injury of business, keep visitors away, close schools, and in many ways interfere with the regular routine of life. Let the rumor spread that an infectious disease is prevalent in a town! Not the most intense tropical heat of a city in summer could force people to go there. They would rather endure the heat than chance catching typhoid or scarlet fever, or diphtheria.

Digitized by Google

It is, therefore, a very necessary obligation for physicians to report to the health department any case of infectious disease or suspected infectious disease to which he may be called. The medical officer of health can then investigate, and take such action as may be necessary.

The most important infectious diseases that we have to deal with are diphtheria, scarlet fever, smallpox, measles and tuberculosis. On account of their similarity to the more severe diseases, we have to deal with chicken pox, German measles, and various skin eruptions. Mumps and whooping cough form special problems. Venereal diseases, while communicable and preventable, have not yet come under the control of health officials to a very great extent. It is only certain special cases of these diseases that we can take action on.

In the most common diseases that occur in our climate, the health physician must depend entirely upon his own personal knowledge. In smallpox, scarlet fever, measles, chicken pox, he can get no aid from the laboratory. In another class of disease, the laboratory furnishes the most valuable aid to the physician. The clinical signs may be verified by the laboratory. In phthisis, leprosy, diphtheria, typhoid, malaria, plague and cholera, anthrax, etc., the microscope and the test tube play an important if not the most important part. The advantages of the laboratory can be obtained by most physicians, for the methods for the use of the laboratory are easy and simple. It is a swab from the throat, specimens of sputum, a drop of blood. These any physician can obtain. In another class of cases, as in cerebro-spinal meningitis, the tapping of the spinal cord is a delicate process, and can only be done by an expert.

In making a diagnosis of infectious disease, a health officer should have two objects in view: first, to protect the public health, and second, to inflict no injury on any private person. Making an incorrect diagnosis may spread a number of cases of disease and work incalculable harm to the community, while to the individual an incorrect diagnosis may deprive him of his liberty, confine him in an infectious hospital, and possibly cause him to acquire the very disease which we wish the public to avoid. An insistent public demand has often forced health officers, even against their judgment, to send persons afflicted with some mild disease into infectious hospitals, while a carelessness, or perhaps a too great regard for the individual and his rights, has exposed and brought down with the disease other innocent members of the community. Few of the general public appreciate the delicate position a health officer is placed in. The variations of the infectious diseases and the mildness of the types make the diagnosis at times exceedingly difficult. It is easier to tell how to diagnose a case than do so when an anxious family or community and criticising physicians await your decision.

The diseases we have to deal with constantly are diphtheria, scarlet fever and measles, an average of from 1500 to 2500 cases a year, and typhoid with an average of about 500 cases. We have an occasional case of

Digitized by Google

smallpox, but since 1902-03, when we had some 1400 cases, have had no outbreak.

Tuberculosis is the great scourge. There are about 7000 to 8000 reported cases now in the city and it causes every year more than 1000 deaths.

In the diagnosis of diphtheria we have to deal with a disease that manifests itself with a membrane on the throat or a nasal discharge or a croupy cough and stertorous breathing, and from the locality wherein the disease manifests itself we have diphtheria of the throat, of the nose or of the larynx. All these forms may be combined in one individual or each case may have only one form of the disease. The onset may be insidious, there may only be a slight temperature and there is no rash present. The pulse is generally accelerated. It is surprising to find how often an examination of the throat is omitted and a general diagnosis given. The throat should always be examined in every case of illness in children and infants. The presence of a membrane or exudate in several persons in one family, school or locality should always make us suspicious of diphtheria. I saw a large number of cases on a training vessel that had been treated as sore throat that proved to be diphtheria. The first case had been regarded as benign and had not been isolated. Diphtheria is often accompanied by swelling of the glands of the neck and occasionally this will be regarded as mumps. In a children's home I had occasion to visit I found a very severe case of diphtheria in a child with these enlarged glands of the neck. There had been a case of mumps in this home some time previously and this was regarded as that disease. The throat was not examined and the housekeeper regarded it as mumps. Some thirty children were exposed in the same dormitory and fourteen caught the disease. The error here was in failing to examine the throat where any one could easily have seen the membrane. Though a very simple procedure it is remarkable how often the throat is overlooked. It is a good plan in schools and institutions to always have the throat examined at any signs of illness.

In diphtheria we have a very great aid in the laboratory. In any suspicious throat a culture should always be taken. A positive result makes us sure of our diagnosis. If we have a suspicious throat one negative culture should not satisfy, several should be taken. The swab should be carefully rubbed around the edges of the membrane; sometimes rubbing at the center we fail to find organisms. In laryngeal diphtheria several cultures may have to be taken before a positive result is obtained. Any suspicious throat should be immediately isolated. In the use of terms we should avoid such indifferent expressions as diphtheritic sore throat or diphtheritic croup, etc. Diphtheria should be restricted to a certain definite disease, a membrane or discharge, a positive culture of K. L. or diphtheria bacillus. Without any clinical manifestation we are not justified in calling a perfectly healthy throat diphtheria in which the diphtheria

Digitized by Google

bacilli have been found and no other evidence of disease is present. Where there is any nasal discharge and a positive culture we are obliged in our present state of knowledge to call the disease nasal diphtheria. The bacteriology work on the diphtheria bacillus in its aid to diagnosis and the production of the diphtheria antitoxin has been the greatest discovery and one of the most beneficent boons to the human race since the days of Jenner's discovery of vaccination. Along with the beneficent results there have come to health officials new problems that we have not yet been able to solve in a logical manner. We find in many cases the diphtheria organisms present weeks and months after recovery from the clinical symptoms. How long to hold the patient in quarantine is a very serious problem. In our own city we regard these cases as non-virulent and harmless when the guinea pig test shows non-virulence. My own experience inclines me to the belief that the long persistent organisms in the throat are non-virulent. I have not been able to find any cases contracted from the long-harbored bacilli in the throat. Nasal discharges such as come in simple rhinitis or in the nasal discharge that accompanies measles often show the K. L. bacillus or a bacillus that bears so close a resemblance that we cannot differentiate them from the irregular forms of diphtheria bacillus. In these cases we are obliged to keep the quarantine until the organisms disappear. It may be in some of these nasal cases we restrict the individual in his liberty but the public safety demands this precaution. Only recently a child eleven months of age was sent to the hospital with nasal diphtheria, a positive culture having been obtained. This child was in the hospital eight months, from October until June. In July while outside it again had a nasal discharge. A culture proved positive. We were again obliged to send the child to a hospital and to make a forcible removal, as the parents were unwilling to send the case willingly. I hope that in the future we will be able to decide these questions when the persistent diphtheria bacillus in the throat or nose ceases to be virulent and to decide positively whether the organisms that are present in nasal discharges having the cultural and rhinoscopic similarities are really diphtheria bacilli.

Another problem that bacteriology has brought out is the fact that many well individuals harbor the diphtheria bacilli in their throats. It is a conservative estimate to say that one per cent of the population of cities harbor the diphtheria bacilli in their throats. Formerly when the K. L. were found in a throat we called it diphtheria and ranked it in the same class as clinical diphtheria. We have in the past made many forcible removals to the hospital of this class of cases and had persons in court and fined for violating the quarantine regulations in regard to diphtheria. But we do not do that now. We make no forcible removals in this class of cases. We do keep children from school and adults we recommend to stay in the house and gargle their throat with some antiseptic. A positive culture without membrane or clinical symptom cannot at present be classed

Digitized by Google

as true diphtheria. Whether these people who harbor diphtheria can communicate the disease is a problem for the future; it is still unsettled.

There is common belief in our city, and I suppose it is widespread throughout the country, that diphtheria is due to some sanitary defect, that bad odors, a broken drain, defective plumbing, etc., are the cause of diphtheria or typhoid. Now you all know that the popular errors of the people today were the dogmas of the physicians of years ago. All the popular errors come from the beliefs of the physicians who iterated and reiterated them years ago. We give them up but the people who have not the opportunity to keep in touch with medical progress cling tenaciously to these beliefs. Therefore when diphtheria breaks out the first call is for an examination of the sanitary condition. But diphtheria does not arise that way. You never get diphtheria from any defect in drains or plumbing. Formerly on the report of a case of diphtheria an inspector was sent to examine the house and later the owner was obliged to put it in order. Some few years ago in Boston a woman hired a lodging house in the center of the city. Her child was taken with diphtheria and in the course of nursing it the mother also contracted the disease. They were both sent to the hospital. The child I believe died. Our sanitary inspector examined the house. In the cellar was a crack in a drain pipe. Now this woman brought suit against the owner of the house, claiming damages for injury to her health through having contracted diphtheria from bad sanitary conditions. They brought up our records to prove that the house was in bad condition. I testified in court that while our sanitary inspector had found a defect in the drain this was in no way the cause of the disease, that the disease the mother had was due to the child and the child had caught it from some other case. But there was our sanitary report and the woman's attorney so pictured the terrible effects that arose from the drain, that the woman was awarded some $6700 damages. Now at that time there were many hundreds of houses with as slight a defect as this one, yet because no case of diphtheria arose there they escaped examination. It was considered a very bad plan to examine houses after diphtheria and the custom is now given up. Bad sanitary conditions are bad things and should be abolished, but they have no relation to diphtheria. Diphtheria comes from diphtheria, as scarlet fever from scarlet fever, and sanitary conditions, good or bad, have no relation to it.

A typical case of scarlet fever, with the flushed cheeks, white powdery appearance about the mouth and chin, the coated tongue, exudation on the tonsils and a punctate rash on the chest and body with high temperature is a comparatively easy disease to diagnose. But when, as usually happens, you are called to see a case, all traces of the disease may have nearly disappeared and the diagnosis is difficult. The tongue is a very valuable aid if it is red and the papillæ enlarged; with any history we can in many cases almost with a certainty suspect it. The "strawberry

Digitized by Google

tongue" is a very valuable but not absolute diagnostic point. It is present in some other cases and some persons have the tongue normally in that condition.

Even if there are no suspicious signs the history of sudden vomiting or slight sore throat followed by a rash even if transitory should make us very cautious. We should advise delay. Keep the case isolated for at least ten days and watch carefully for any desquamation. If the skin at the junction of the finger nails shows any breaking, it is the early desquamation on the hands and we are safe in making a diagnosis of scarlet fever. The fault with many physicians is that they desire to make snap diagnoses. The mild case of scarlet fever is very difficult of diagnosis and it is only by carefully keeping up isolation and watching that we can avoid error.

Scarlet fever is often mistaken, especially if mild, for German measles. This disease is a distinct entity lying as it does between measles and scarlet fever. German measles comes out in a small rosy macular eruption without any especially premonitory symptoms, starting from the face and runs rapidly over the body and may pass off in a day or two. It never shows any distinct desquamation, a few scales may be shed that is all. If desquamation comes in the palms or soles it is scarlet fever you are dealing with. Several small outbreaks have occurred from physicians not considering this.

Scarlet fever is quite frequently reported as diphtheria and measles, when the exudation in the throat is severe. As diphtheria and scarlet fever and diphtheria and measles may occur together, it is only by taking throat cultures and a careful examination of the eruption that a diagnosis can be made. Generally the diagnosis of diphtheria and measles turns out to be scarlet fever.

The various forms of septic rashes and drug eruptions, dermatitis from various irritants as mustard baths, sunburn, etc., have often been mistaken for scarlet fever. Whenever any of these occur, until the diagnosis is sure it is wise to isolate them.

The poison of scarlet fever is present in the desquamating skin. Therefore quarantine is kept up until this has ceased. But in addition the patient should not be released as long as there is any discharge from the nose or throat, ears, or any open sore or suppurating glands present. These may still hold the contagion. Many of our "hospital return" cases so-called are supposed to be due to the presence of the organisms in the naso-pharynx when all other evidences of the disease have disappeared. We are perhaps coming to regard the discharges spoken of fully as important if not more so than the desquamation in this disease. We have not yet reached a point in practical work when even the later diagnosis can be regarded as harmless.

In the list of infectious diseases we have to deal with, smallpox of course stands at the head. Varioloid is modified or mild smallpox. This

Digitized by Google

disease presents itself in several forms. In the ordinary form, the disrete pustular or mild or modified chicken pox is the most common disease for which it may be taken, then there are drug eruptions, syphilis, molluscum, contagium, measles.

In the hæmorrhagic form, which, fortunately, is rare, in my experience it has been called "hæmorrhagic measles," "hæmorrhagic scarlet fever," "black measles" or "purpura hæmorrhagica." Any disease reported as such or any death return with this as the cause of death should be carefully examined. We have found several cases of hæmorrhagic smallpox in investigating these diagnoses.

In the ordinary form of smallpox the initial symptoms have nothing absolutely diagnostic from many acute diseases; chills, headache and backache, elevation of temperature are common; all may be present or any may be absent. Backache in lower part of the back is a very common symptom. It is liable to be overlooked in women as due to menstruation or it may be regarded as lumbago, dumb ague, etc. In many patients an adhesive plaster is found on the back showing how prominent the symptom is. The initial symptom only makes us suspect. We cannot diagnose. Then after two or three days of illness the patient feels somewhat better and at that time the eruption appears. This is a very important point. The drop in temperature and general improvement is common only to smallpox. In measles and scarlet fever the patient is worse and the temperature goes up as the eruption comes out. The eruption comes out on the exposed portions of the body generally, first on the face and then spreads downwards all over the body, making its appearance last in the thick portions of the fingers, palms and soles. The eruption in the first two or three days may be mistaken for measles but it has a hard firm feel while that of measles is velvety. It rapidly develops into a vesicular eruption while measles will flatten out as it becomes older.

The eruption as it comes out will be somewhat more developed in appearance on the face than on the trunk, simply due to its being somewhat older. But the whole process is development and may be said to go together. When the eruption is seen on the third or fourth day it is very often taken for chicken pox. It is in this second stage as the fluid enters the papula, we have a depression in the center, a dipping down, which we call the umbilication. The drying and crusting of chicken pox vesicles is often taken for umbilication. The disease runs into the pustular stage from the fifth day, developing into ripe pustules which burst or dry into crusts, then drop off and the circle is complete. The duration varies anywhere from two to six weeks, dependent on the severity of the disease. It is not necessary to describe all the variations and causes of the disease.

In my records I find that measles, chicken pox and the various forms of syphilitic eruption lead to the most errors. Measles in the early eruption, especially in colored people, is often mistaken for smallpox. The

Digitized by Google

coarseness of the measles papules greatly resembles smallpox. But a day or two of careful observation soon settles the question. Measles eruption, even if slightly papular at first, fades and flattens while smallpox increases. The palate and throat in measles often show the mottled purplish eruption that is entirely different from smallpox.

Chicken pox is very frequently taken for smallpox and vice versa. The statements that are made by some writers that varicella is a children's disease has caused more than one unfortunate adult to be sent to a smallpox hospital. I recollect one case where a woman was two weeks in a hospital with the diagnosis of smallpox. She came to our city and then broke out with true smallpox. What had happened was, that she had chicken pox and in this hospital, where she came in contact with the disease, contracted smallpox and after the proper incubation came down with that disease in our city. In this case the error in diagnosis gave smallpox to one individual and also threatened an outbreak in another city. I find every year a few or many cases of chicken pox in adults, and in the aggregate have found it fairly common.

But do not treat suspicious eruptions in an adult lightly. It is better to isolate every case of chicken pox and vaccinate all who have been exposed, than that an error such as has often happened should bring about an outbreak of smallpox.

Chicken pox cannot be differentiated by the location. Its favorite seat is the covered portions of the body but it may be abundant on the face, though it is generally most abundant on the back. The initial stage differs from smallpox; it is generally short, seldom over a day, or may be so insignificant that nothing is thought about it. The patient will say, "I was all right until I found these water blisters on me." The initial history has considerable influence. As a rule in chicken pox the palms and soles are spared in spite of a considerable eruption over the body and if the vesicles do appear they are few and superficial. In smallpox the eruption is almost always present in the palms and soles in cases of any severity and even in mild cases a few spots are seen. The arch of the instep is a favorite site for the smallpox eruption. In almost any case of smallpox after a few days the eruption is present in the palms or soles. In later cases the brown spots seen under the skin deep down are almost diagnostic of smallpox. I know of no other disease that causes them.

The eruption in chicken pox is practically a vesicle (a water blister) from the start. The patient often states that the first thing noticed was some water blisters. These vesicles as seen are of different sizes; small and large and shrivelled or broken down and crusted may be found side by side, totally different from smallpox. The vesicles of chicken pox are easily broken down and generally rupture completely. Chicken pox comes out in crops. The eruption as it comes out in chicken pox is practically a vesicle from the start. It may be small but is almost always a vesicle. If there is a papular state its duration is so short it may be overlooked.

Digitized by Google

In syphilis there is a history of a long-standing disease. The large irregular mucous patches in the mouth are different from the small distinct rounded erosions seen in the vesicular eruption in the mouth in smallpox. In smallpox the eruption on the body will be in very nearly the same stage. In syphilis careful search will show many stages. Some will have the brown color and will have some scaling on top of the papules. The eruption in the palms in syphilis has a flattened or fissured appearance; in smallpox you have the hard, firm brown disks. Even the best dermatologists may mistake syphilis for smallpox. A colored man was admitted to one hospital for a pain in his side and was made ready for an operation for appendicitis. As he felt better the next day the operation was omitted. He had an eruption come out on him and was treated for syphilis. Under mercurials he made a rapid recovery and was discharged; after awhile I was called to this hospital to see a suspicious case that I found to be smallpox. Looking over their record of cases I found the history of this colored man. I found him at work, still with the characteristic disks, brown and hard, in his feet.

In measles we have a disease that is commonly treated too lightly. It is a preventable disease and, therefore, we should do what we can to check it. I am glad to see that your State Board recommend most excellent precautions. In the first five years of life the mortality is high and under two years it causes a very large number of deaths. In our city the deaths from measles in some years are greater than from scarlet fever, a disease in which we take the utmost precautions. It is very infectious in the pre-eruptive stage, the poison being given off from the mucous membranes. A cough, coryza or watering of the eyes should be sufficient to send a child home from school. An examination of the mouth will often show the koplik spots in the mouth before the eruption is out on the body. Infants should be especially kept away from any case of measles.

After a case has been discovered in a school, especially in kindergartens, a plan that has been tried in Germany may often prove of value. It is certain that when a case breaks out in school that within ten days secondary cases will arise, especially among those who have been in close proximity to the first case. The carrying distance of measles is not great. These secondary cases will give rise to the next crop that will probably infect all the susceptible individuals in the room. Now to prevent this third crop, the school should be closed during the whole of the second week from the time the case was discovered. Then the infected cases will be taken ill at home and when the room is reopened you may find it free from measles. If something is not done practically all the children will have measles. In one schoolroom we kept open we had forty-three cases out of sixty children. When partial closure is adopted, the number of cases may be comparatively small. Good results have been reported from Germany. If many children have previously had the disease such a procedure is unnceessary.

Digitized by Google

In typhoid we have a disease to which, until recently, only a moderate amount of attention was given by health officials. Now we consider it a very important disease. Its early recognition is difficult but in New England any continued fever without definite cause should be viewed with suspicion. The case should be isolated and the attendant on the case should not have anything to do with milk, food or handle anything that may be taken internally by others until the diagnosis is made. If the symptoms are indefinite the blood should be examined for the Widal reaction. If the patient is only suffering from indefinite symptoms and is up and about, he should not be allowed to handle or have anything to do with milk or any of its products. Once the diagnosis made by the characteristic stools, rose spots and enlarged spleen is established, personal hygiene should be insisted upon—disinfection of the dejecta with carbolic solution or chloride of lime, separate utensils, isolation and care by only one nurse who should have nothing to do with the family cooking or handling any food products and who should be instructed in the disinfection of her hands and all articles brought in contact with the patient. This will suffice if there is only one case in a locality. If there are several, the people should be advised to sterilize the water and pasteurize the milk. Our experience in the last few years has taught us that personal infection plays a prominent part in the diffusion of typhoid and not rely upon the fly too much as a carrier.

The following are some instances of personal infection.

(1) An outbreak of some twenty cases occurred in our city. They were all found to get their meals at one restaurant. The milk was at once suspected but that was given up as the same milk went to many other places where no typhoid occurred. The help were examined. All were well, but one girl who waited on the table was found to have a sister ill with typhoid. She acted as nurse to her sister while also waiting on the table. Her hands were probably infected and from her the disease spread.

(2) In a hotel five cases occurred amongst the help. The girl who waited on the table was found to have walking typhoid.

(3) In a newspaper office six of the employees were taken with typhoid. Milk, water and sewer gas were all suspected. These employees got their meals in a restaurant provided in the building by the newspaper. On investigation it was found the cook had a mild case of typhoid and had probably infected the food that the others ate.

An outbreak occurred in this city a year ago. Four hundred and ten cases directly and some 130 indirectly were traced to the same cause. One of the milk dealers, who had been treated for grippe, but was in reality a walking case of typhoid, had infected the milk. While in this condition he had tasted the milk that came in the milk car, dipping a spoon into the cans with his hands and then tasting it. In this way the

Digitized by Google

milk supply that was distributed among a large number of people was infected. Again the personal infection.

These are only examples of numerous cases I could cite from my own personal experience. The moral is to keep all who are even mildly ill or attending sick cases, away from all food products.

Bacteriology has again brought questions that we cannot answer. When is a typhoid case free from danger of spreading the disease? Clinically we know that ten days after freedom from all temperature the patient is regarded as well. But bacteriological investigations in the hospitals have proved in very many cases that the bacilli are present in the stools and urine for six weeks after the apparent return to normal. In, however, about 5 per cent of the cases the bacilli are present for long periods of time, even for years. These persons may be carriers of the disease. All that we have done at present is keep track of these cases and prevent them from working at such occupations as cook, waiter, milkman or any other that might menace public health.

On farms the convalescents should be kept from handling milk for a considerable period after recovery. Others who may be typhoid carriers and not in any occupation concerned with food should be carefully instructed as to disinfecting the hands, etc., after going to the stool or urinal. Only by taking these precautions can we hope to prevent the occurrence of many obscure cases.

The disinfection of the room, washing the floor, bed and disinfection of the room by formaldehyde should be insisted upon. All bedding should be steamed if possible; if not, the blankets and sheets, etc., should be soaked in a disinfectant, then boiled. Vaccination in typhoid has been tried abroad with excellent results and perhaps in the future we may have a prophylaxis for typhoid. It is too early to recommend this as a preventive health measure.

Again the sick room should be carefully screened to protect against the possible carrying of the infection by flies.

Even to-day we find some of the antiquated ideas in regard to sewer gas as the cause of the disease still prevalent. A physician only recently sent a request that we examine the plumbing of the house, as there was a foul odor. Of course the sewer gas does not contain typhoid. Both chemical and bacteriological examination of sewer gas show that it is no more dangerous than any other air exposed to putrescible material. Men who clean out sewers, plumbers, etc., do not seem to have infectious diseases more than others.

Personal infection in families is very common. When several cases are in one house, it will be found that they have not all come down together, but one case was generally taken ill early and then infected the others.

There is, perhaps, in the cities a feeling that as the cases of typhoid occur in the late summer and autumn and many among persons returning

Digitized by Google

from the shore or country, these places are responsible. They are to a certain extent but as the summer resorts draw visitors from everywhere, undoubtedly many of their visitors come with typhoid in their systems. Many are undoubtedly convalescents from typhoid who are sent to recuperate or come from localities far away where typhoid is epidemic and these help to spread the disease. Before typhoid comes in our country districts it has to be brought there.

In the transmission of infectious diseases, there are many instances of scarlet fever having been carried by fomites or possibly third persons. Smallpox can also be transmitted this way. I know of one case of a man who contracted smallpox from letters that were sent to him by his wife, who was in a smallpox hospital in a distant city. She had been away from Boston for many weeks, and the only communication was by letter. There were no other cases in our city. It must have been contracted in this manner.

Infection may also be caused by articles such as spoons, pencils, chewing gum, that may have been in the mouths of diphtheria patients. Milk, water, vegetables and the hands have often been carriers of typhoid outbreaks.

Some three years ago we had several hundred cases of scarlet fever that received their milk from one contractor. It is nearly certain that the disease was spread by the milk, though the original case was not traced.

In our experience the milk has only been suspected in a few small outbreaks of diphtheria. Measles can be acquired only by direct infection. The isolation of the patient is all that is required. The organism of measles is short lived and does not last long away from its host. It can not be transmitted.

It should be remembered that transmission by fomites and third persons forms at the most but a small part in the spread of infectious diseases. It is the mild or unrecognized, or wrongly diagnosed cases, which are the great source of danger to the community. It is the mild scarlet fever, the slight diphtheritic sore throat, the mild or modified case of smallpox walking case of typhoid, that are the chief causes of the spread of disease. When an outbreak occurs a careful search must be made for the mild cases before any other cause can be assigned. The more we see of disease the more importance we attach to the personal infection.

TREATMENT.

As regards treatment from the public health point of view, we have vaccination as an absolute preventive in smallpox. This is the easiest disease from a health standpoint to handle. We must, however, confess that one successful vaccination does not protect for life. Immunity may wear out after a certain number of years. We should always recommend revaccination. Those who oppose vaccination cite statistics to prove that those who have been vaccinated acquire the disease. This is true so

Digitized by Google

far as it goes, but successful vaccination within ten years is practically always an absolute protection. Variolmun powder given by mouth is not vaccination.

For diphtheria we have antitoxin, both as a nearly positive curative agent, and in small doses as an immunizing or protective agent. In bites from rabid dogs the pasteur treatment is our one safeguard.

In typhoid, vaccination with the dead organism is proving a great success, both as a curative and prophylactic agent. It is claimed as a prophylactic it will protect from typhoid for two years. It has been used to a considerable extent in the British army. It has not yet been used enough in this country to be generally advised by health officials.

The only other means of combating infectious disease are placarding, quarantine, and disinfection. Placarding, or posting warning cards on a house, informs the general public of the existence of a dangerous disease. Quarantine, or complete isolation, is a very valuable method of preventing the spread of disease. If you carry it out completely, you shut off all danger from that case. The way in which quarantine can be carried out has to be judged by the locality in which the disease exists. Your very excellent method of quarantine in Vermont could hardly be carried out in a large city, with many cases constantly occurring. In small communities it is most effective. We isolate in our city the patient and nurse, but have found it difficult to quarantine other members to any great extent. Cases that cannot be isolated at home we send to the hospitals for infectious diseases, either willingly or by the power of forcible removal, which we often use. We endeavor to carry out the same methods in typhoid as in the other infectious diseases. Your system of full quarantine, especially in regard to dairy laborers, or those who handle milk products, is a great protection to the public. Disinfection, accomplished by formaldehyde gas aided by washing with corrosive carbolic, steaming and boiling, is all that is necessary. The method of liberating formaldehyde by permanganated potassium is a very convenient method, especially in scattered communities. We use the regenerators, by which the gas is driven off from the formaldehyde solution by heat. It requires one used to them to handle them readily. It is, however, not the form of apparatus that is used, but the amount of gas which is liberated. The fault with many excellent methods is that not enough formaldehyde gas is used to disinfect. Never less than a pint or a pint and a half should be used to each 1000 cubic feet of air space. If this is done, any method is satisfactory, but small amounts will not disinfect.

DISCUSSION.

R. M. Pelton, M. D., Health Officer, Bradford.

Probably one of the best known facts concerning bacteria is that they are related to the development of certain pathological processes. Among those entering the body, there are some which, under suitable conditions,

Digitized by Google

produce phenomena by which diseases are characterized. These are the micro-organisms which induce infectious diseases, and are referred to as pathogenic bacteria. Therefore, it is evident that infectious diseases cannot exist without the presence in the body of living micro-organisms. Whether the micro-organisms possess pathogenic activity will largely depend on the host, but also on its own virulence and vitality. The reaction of the body cells against the pathogenic bacteria depends first on the virulence of the bacteria, second on the number gaining entrance. Difference in virulence often serves to explain difference in the clinical type of the disease.

The Host. This is a factor of the greatest importance when we consider the infectious diseases; for instance, certain bacteria will only produce diseases in certain animals, and certain diseases are peculiar to men only, such as typhoid, syphilis, measles, scarlet fever, etc. The race also has some influence as well as age. Bacteria may gain entrance into the body through several different ways, but the commonest is through the mucous membranes. Considered in its practical relation, the subject of the communicability of infectious diseases is one of the highest importance. Some infectious diseases cannot be communicated to animals, but others, like tuberculosis, can be communicated from man to animals and vice versa. We can divide the infectious diseases of man into two general classes: those which are easily communicable and those which are not. Among the first, for example, we have scarlet fever, measles, smallpox, etc. Among the second class we have hydrophobia and syphilis, which require direct inoculation.

Dr. Joseph C. Breitling, Lunenburg, Vt.

Mr. President: We have listened to excellent papers on the subject of pure water and pure air, and we ought to comprehend the vital importance each bears to healthy communities. Eternal vigilance is the price of safety and we shall find abundant opportunity to put into our general practice the many valuable suggestions recommended at this school.

In considering the subject of infectious diseases, I shall endeavor to call attention briefly to the question of prophylaxis.

Infectious diseases, diphtheria, scarlet fever and tuberculosis, are usually carefully and thoroughly handled and taken care of, in the majority of instances. The duties of the health officer should be to improve the sanitary condition of our villages and farming districts so that these outbreaks will become less each year. It is up to us to get busy and find out just where and what improvement is demanded, whether it is in the water supply, milk supply, or sewage disposal, and if we work unitedly, our state will become a model one. Scientists have told us that the germs of disease are present in perfectly healthy individuals and all we need is the lowered vitality for the inception of the disease itself. In our daily intercourse with the families of our practice we should teach the

Digitized by Google

importance of hygienic living as well as the sanitary condition of their homes.

In conclusion let me express the wish that upon our return to our homes, we may take some of the enthusiasm and inspiration we all experience while here.

Dr. E. E. Whitaker, Newport.

I believe if we are in a condition of perfect health we are absolutely immune from any contagious or infectious disease, for these germs can not multiply unless there is something for them to live on. Normal tissue furnishes no soil for them to thrive upon. It is almost cruel to make an error in the diagnosis of any disease. I well remember in my general practice being called upon to treat some cases of scarlet fever. They had the most virulent type I ever saw. They were three beautiful girls in one family, and I lost them all. The great inquiry in my mind and in that of the entire community was, Where did it come from? There was not a cleaner family in the whole country. The first case lived forty-eight hours; the second lived three days and the third case lived four days. There was great purging, vomiting and they were all delirious. I could not feel satisfied until I had made a thorough investigation as to the origin of the disease. I learned there was a young lady visiting there; she was twelve years of age; she came to visit her cousins from Montreal and just previous to her visit she had had what the doctors called la grippe with a rash. I think it truly was grip and it engripped thase three beautiful girls until they died. It was nothing less than scarlet fever. She came to this home in a stage of desquamation. These three cousins were of a scrofulous type which furnished an excellent field for scarlet fever and it took on a malignant type.

As to smallpox, there have been some wonderful records in our state as to the making of diagnoses. In our vicinity since I have lived there, we have had one slight outbreak. Dr. Holton was called to the place. We had five cases which we isolated at once and that was the only outbreak we had in our community.

I believe nature furnishes her own bacteria in health, in numbers capable of destroying all external bacteria which may enter the body. If you are in perfect health, you must be immune from diseases of all kinds.

Dr. B. H. Stone.

I would like to ask Dr. Whitaker if in his opinion, since Adam ate the forbidden apple, if anyone has been absolutely normal or absolutely free from this autointoxication.

Dr. E. E. Whitaker.

We know that the nearer man lives to nature, the more perfect his

Digitized by Google

physical condition is. I don't believe there are very many perfect men or perfect women, but I do believe there are some.

Dr. H. D. Holton.

We do know that if one or two children are in the proper stage of measles, and these children mingle with fifty others who have never had the disease, there is every reason to believe that these fifty other children will contract the disease.

Dr. W. N. Bryant, Ludlow, Vt.

I rather doubt if Dr. Whitaker believes what he just said—that if a man is in a perfect condition, he is immune to the germs of infection. That, at least, is a comforting belief. But if any of you believe that, please don't go home and impress it upon the minds of your people that, if they are feeling pretty well, they can expose themselves to these diseases. My father always believed that no one could catch cold attending a camp meeting. He continually went to these meetings, caught cold, and finally died. My father also believed that we were immune to a certain number of diseases, variola for instance. He had been vaccinated and it never took and he said he had no hesitation in taking care of a smallpox patient. This, by the way, was about the time I was studying medicine. It was also about the time vaccine was first coming into notice. When I returned home for vacation I brought some vaccine and vaccinated my father. He thought he was going to die and so gave up that belief.

Dr. C. W. Peck, Brandon, Vt.

You will excuse me if I say a very few words on this subject. This is the first time in my life that I have ever had occasion to disagree with Dr. Bryant. I think he has always been correct. He may be correct now in a way. The observation made by Dr. Whitaker is correct. The point is, a man is not in that condition always. I wish to tell you that any man in perfect health, and by that I mean a man who has little or no waste in his system, is immune from any disease on earth. God gave us the right of power to resist disease and just so far as we get out of this condition, just so far will we suffer by it. It is so seldom that you find this condition, that many of you may not believe such a condition does exist. Take for instance the Italian people who live in this country. The standard article of food is macaroni. Now let one of these men get an injury and you can do just what you please with that injury. They are not so subject to inflammation as we Americans. We eat too much to start with and exercise too little. That is the trouble with us. We eat a large percentage of material that we can not take care of and what is the result? It becomes waste that accumulates in the system. We get into a condition of autointoxication and when we are exposed to any disease, we imme-

Digitized by Google

diately contract it. This is a theory of my own, and I am going to write an article on it. I have studied the subject carefully and have reached these conclusions.

Mr. H. H. Wheeler.

Would you fumigate after diseases like measles and whooping cough?

Dr. C. F. Dalton.

The doctor spoke of several points helpful in the diagnosis between smallpox and chicken pox. These are two diseases with which we as health officers have something to do, as we are called upon to decide whether the case is one or the other. The doctor mentioned one point which I want to emphasize and that is the difference in the occurrence of the eruption in the two diseases. The eruption in chicken pox comes in crops. In my experience this has been one of the best features in deciding which disease we had to cope with. All the authorities and advice which I can procure say, if you find that the patient has an eruption in different stages, if he has some in the papilla stage, some in the vesicle stage and some crusts, you can be pretty sure you have a case of chicken pox. In smallpox, the eruption is all of the same type. That has been a very helpful point to me in cases that have come before me. There is a question I would like to ask. Several authorities state that children under three months of age never contract measles. That is not my experience. I have seen children under three months of age escape measles when all the rest of the family contracted the disease and I have had children from one to three months have the disease. I would like to have the Doctor give us the benefit of his experience.

David D. Brough, M. D., closed the discussion.

The first question asked, whether it is necessary to disinfect after measles.

We had occasion to take up that subject in Boston and I have communicated with the authorities I know in the United States and have also taken up the subject with authorities abroad and the universal opinion is that it is not necessary to disinfect after measles. If rooms that have been occupied by a measles patient, are then occupied by a person who has never had the disease, it is very likely the disease will be contracted, if no precautions have previously been taken. I think the expense incurred, if borne by the health boards, is useless.

The second question—is it possible for children under six months to contract scarlet fever or measles? Young children certainly can contract these diseases, but they are not so susceptible. You will find that children under six months and over six months contract the disease if equally exposed, but you will find there is a greater tendency to take it over six.

Digitized by Google

With regard to the question about sewer gas and sewer air, I would say there has been considerable work done along these lines by Dr. Winslow. It was found that it was practically impossible to recover typhoid germs which have been put into the water. It is not the germs of disease you should be looking after, but these mild cases, these walking cases. No one will say, however, that breathing foul air, impure air, foul gases, etc., is conducive to health. They put a person in a condition to catch cold, they impair that person's health and he becomes more susceptible to any disease to which he is exposed. It has never been shown that these diseases are more prevalent among people working in sewers and in similar work, and we have found that diphtheria does not occur more often where the worst conditions prevail. I have seen a large number of people who were in perfect condition physically; they were perfect specimens of men and women, but they had never been vaccinated; they were exposed and they all came down with smallpox. So you will see it makes no difference what condition you are in. If you come in contact with a case of smallpox and you have never had the disease and have not been protected by vaccination, you are bound to contract the disease. We had an outbreak of typhoid fever last spring with between five and six hundred cases of the disease. There were no better class of people to be found. Their houses were in the very best condition. They were all taking milk from practically the same dairy. The typhoid bacilli were in the milk and got into their systems and caused the disease. In the cities, we can not carry out absolute quarantine, keeping the people isolated. We call the attention of our inspector to these cases and he makes his inspection and reports upon the same. If he says that the case of scarlet fever, diphtheria or consumption is not properly isolated, we remove that case to the hospital. We have so many cases, that it is not possible to carry out a complete system of isolation. In rural communities and where there are only a few cases, strict quarantine can be carried out and if isolation is adhered to, you are taking the best possible method to stop the spread of the disease.

THE VENTILATION OF PUBLIC BUILDINGS.

By Prof. J. W. Votey, Sanitary Engineer of the Board.

The subject of ventilation has been ably presented and fully discussed at some of the previous sessions of this health officers' school, and in taking up the matter again I do not expect to add anything of great value to what has already been given, but rather to present again for consideration a brief statement of the conditions and general principles which govern the successful ventilation of our public buildings. Frequent discussion of this question of ventilation is desirable in order that the general

Digitized by Google

public may have a better appreciation of the importance of the subject, and a more thorough understanding of the means commonly used to accomplish the desired results. So long as we find the officials in charge of our public buildings reluctant, or even opposed, to making suitable provision for the ventilation of the buildings in their care, so long is educational work along this line greatly needed. The present paper is offered with this in view.

The ventilation of a building might be defined as the systematic removal from the building of the air that has been vitiated or polluted in any manner, and replacing this with the freshest and purest air obtainable, the process being under control as to quantity and temperature of air delivered. This means that the occupants of the building can be furnished with the necessary amount of fresh air under comfortable conditions at all times, regardless of the weather. To accomplish this, however, certain definite arrangements with predetermined relations are necessary which make up the system, so-called, of the ventilation process.

The air which we need to remove from a building because of its polluted condition may be vitiated from some one or more of the following causes: The ordinary process of respiration, with the various waste products thrown off by the lungs; the outward odors or exhalations given off by unclean or possibly diseased persons; the odors from damp clothing; in certain audiences, the characteristic trade odors that cling to the clothing of the workmen, the gases and fumes generated in the laboratories or the dust and waste products of industrial processes. All of these render the air in which they are found undesirable or unfit for further respiration, depending on the degree of pollution. We are accustomed to speak of the introduction of fresh air, and the removal of foul air, as if these two kinds or conditions of air existed in a room at the same time, e.g. in distinct layers. The work of ventilation would be much simplified if this were the case but, instead, we have in an unventilated room the foul air gradually mixing with and diluting the fresh air.

One of the first points to be decided in planning the ventilation of a building is the quantity of air that must be furnished or delivered into the building or, to state it in another way, What shall be the allowed dilution of the fresh air in the building? The total quantity of air needed depends upon the number of occupants of the building, the person being taken as the unit in computation. It is necessary to adopt some standard for determining the degree of foulness of air or the amount of dilution, and for this purpose the amount of carbonic acid or carbon dioxide is the index commonly used. This is not chosen, however, because this gas is the most objectionable feature of vitiated air for, as is well known, it is not, but it is the one impurity that is most readily determined. As the average person exhales a known amount of carbon dioxide at each expiration, the degree to which the air of a room is vitiated can be readily found by the determination of the percentage of this gas as it is assumed

Digitized by Google

that all other impurities in the air vary in the same proportion as the carbon dioxide.

Pure outside air contains three to five parts of carbon dioxide in 10,000, four being the amount ordinarily assumed. If the average individual uses one third of a cubic foot of air per minute, and the expired air contains 400 parts of carbon dioxide in 10,000, we have in these figures the data for determining the amount of air required for any assumed degree of purity. The standards of purity adopted by different authorities range from six to ten parts in 10,000, the latter, however, being an extreme limit, as below this point the vitiated condition of the air can be detected by the individual and its unpleasant effects felt. If six be assumed as the standard, or an increase of two parts of carbon dioxide over the outside air, there will be required about 50 cubic feet of air per minute for each person supplied. Thirty cubic feet as a minimum, however, has been quite generally adopted for a standard for schoolhouse ventilation and, to a considerable extent, for other buildings. This represents seven and one third parts per 10,000. It should be noted that this 30 feet, as originally adopted and made a law in Massachusetts for schoolhouse work, was not considered to give entirely satisfactory ventilation, but economical considerations prevented placing the minimum value higher than this. The cost of ventilation, especially in this climate, varies with the quantity of air supplied owing to the need of heating this air, and increased quantities demand increased size of apparatus and flues. Wherever it can be afforded it is better to furnish 40 or more cubic feet of air. The standard adopted for ventilation cannot be a rigid one as there is considerable variation in the requirements of different classes of buildings and even of different rooms in the same building. The purpose for which the room is used, the cubic capacity of the room, the character of the occupants, the time the room is occupied, the construction of the building and climatic conditions, all have some bearing on the quantity of air it may be desirable to supply in a given case.

In arranging the air inlets to a building great care should be taken to see that these are so located that pure air, free from dust and uncontaminated in any manner, is secured at all times; they should not be placed in the side of a building facing a dusty street; they should not be within reach of the foul odors of rubbish heaps, nearby stables or manufacturing plants; they should not be placed at or below ground level where liable to be choked with rubbish or blocked with snow in the winter; if necessary to protect the inlets from driving rain, snow or excessive winds, suitable hoods or housings should be placed over them. It will rarely be necessary in this state to filter and wash the air supply, as is customary in the large cities, but it should be borne in mind that pure air cannot be taken from the outside of a building unless the premises surrounding such building are kept in a wholesome and sanitary condition. The foul air withdrawn from the building should not be discharged near the fresh air inlets nor

Digitized by Google

windows through which it might again find its way into the building, nor should it be thrown out in such a manner as to be a nuisance to the occupants of adjoining buildings. Usually the foul air is discharged at the top of the building and can give no ground for complaint; if it is discharged from the side of a building, the outlet may need to be so protected that the wind cannot blow directly into it, as otherwise a strong wind may seriously interfere with the operation of the ventilation system; for this reason, the side of the building toward the prevailing winds should, if possible, be avoided. From the inlets in the walls of the building, the fresh air should pass through tight metal or masonry ducts leading to the rooms to be supplied; this is necessary to prevent the possibility of foul air or dust leaking in from the cellar, basement or even coal bin through which such ducts may run; wooden ducts should never be used, as it is impossible to build or keep them air-tight. An old method, customary in small buildings without basements or cellars, was to take the air from the space under the first floor to which it was admitted through a hole in the foundation wall. Those who have experienced the kind of air and odors sometimes furnished under such conditions understand why this method is no longer permissible.

In connection with the arrangement of ducts and flues for distributing the air through a building there is an important question to be discussed, and that is the power for forcing the air through the building. It is a common fallacy that a room may be ventilated by merely providing an opening for the escape of the foul air; but no foul air will escape through such an opening unless an equal amount of air comes into the room to take its place; conditions may be somewhat improved by providing an opening for the entrance of such air but, disregarding wind influences, there will be no definite circulation of air through these openings without an impelling force. There are two methods of producing the circulation through the building, the natural or gravity system and the mechanical system. In the former case advantage is taken of the difference in density between two columns of air of unequal temperature; the warmer and hence lighter air in the flues rising through the building and being replaced by the colder and heavier outside air; the greater the difference of temperature and the higher the columns of air in the flues the stronger the force developed. The natural circulation is variable, as it is influenced by wind and weather conditions and to produce definite results it needs to be carefully designed and properly operated. Under this system the fresh air is passed over the heating surfaces and brought to the temperature necessary to keep the rooms comfortable for the occupants and then distributed through suitable ducts and flues to the various rooms. The force developed in the flues by this heated air is never large and the velocity of the movement of the air through the flues is correspondingly small so that flues of considerable size are necessary for the movement of large volumes of air. The most common mistake that is made in

Digitized by Google

ventilating by the gravity method is using flues that are too small for supplying the required amount of air. In designing such flues, attention should be given to eliminating all possible resistances to the flow of air through the flues by using smooth interior. surfaces and easy curves wherever turns are necessary; the openings into the rooms are best covered by wire grills instead of cast-iron register faces, as the former offer less resistance to the flow of the air.

The foul air is removed from the room in the gravity system of ventilation by special vent flues or aspirating shafts; artificial heat is generally necessary in such flues to produce the required flow of air. Here again we meet with another common error in ventilation work. Vent flues are often provided for the ventilation of a building which fail to give satisfactory results, as no means are provided for heating such flues and there is consequently little or no circulation through them. Vent flues connected to the ceiling of a heated room will have circulation due to the escape of the heated air at that level, provided, of course, that this is warmer than the outside air; this is not, however, as will appear later, the proper place to take out the foul air from the room, except the upward circulation is used in the room, or in case ceiling vents are desired as auxiliary to others to prevent the possibility of overheating the room. Vent flues that are located in the interior of the building have in them the average temperature of the building, e.g. 68 or 70 degrees F., and produce a very feeble draft especially in mild weather, and possibly no draft, or a reversed draft, in the summer season when the outdoor temperature may be higher than that in the building. Vent flues located in outside walls have their temperatures change with weather conditions and are generally useless. Artificial heating is therefore necessary for the successful operation of all vent flues; this is sometimes attempted by gas jets which are wholly inefficient except in the case of a small pipe ventilating, e.g. a small toilet room; the large flues or stacks as used in the ventilation of public buildings can be successfully heated by the special stack heaters built into them or, if the building is steam heated, steam radiators or ordinary steam piping can be used for this purpose; the former requires large stacks or chimneys into which vent ducts from the different rooms lead, and this sometimes makes it difficult to secure equally good ventilation in all of the rooms. It is much better to use a separate vent flue from each room and these can readily be heated by steam pipes or radiators. If stacks with heaters are used, the heaters should be placed in the basements and the vent ducts for the first floor rooms should be brought down into the stack just below the heater; vent ducts from second floor rooms should them enter the stack with deflector plates or curved dampers, to insure a positive draft. The steam pipes or radiators used for heating flues can be placed wherever convenient, but the lower they are in the flue the higher will be the heated column to the top of the chimney and the stronger will be the draft; the foul air should

Digitized by Google

always enter the flue below the steam pipes in order that it may be heated as it passes over them. There is an inexpensive method of extracting the foul air formerly in common use, and still occasionally resorted to, by which use is made of the smoke pipe from the heating apparatus to furnish the necessary heat for the vent shaft. As usually carried out, the smoke pipe of heavy wrought iron, cast iron pipe or sewer tile is run up in a square brick shaft serving as a vent flue, the heat from the smoke pipe raising the temperature of the surrounding air sufficiently to induce the draft. Another method of utilizing this waste heat is by building vent flues in the brick chimney adjoining the smoke flue; this is less effective than the other plan as the heat usually reaches one side only of the vent flue. This plan is open to the objection that the heat in the smoke pipe varies greatly, and in mild weather when the heater is out of commission there is no ventilation.

Various attempts are made by patent appliances called ventilators or cowls which are attached to the top of the vent flues to extract the air from such flues without the necessity of heating them; all such devices depend upon deflecting the wind across the open top of the vent flue in such a manner as to create a draft or suction on the flue. Naturally such devices fail entirely when there is no wind, and at other times their action is so irregular that no dependence can be placed upon them for systematic ventilation work. Their best service is in preventing the wind blowing down the vent flue and in shutting out the rain and snow; the latter, however, being a matter of minor importance.

In the mechanical system of circulation of the air, the necessary pressure for moving the air is produced by fans acting either as blowers and forcing the fresh air into the building, or as exhausts in extracting the foul air, or combinations of the two may be used. When the fan is used at the inlet or fresh air end of the system, known as the plenum, the system rooms of the building are under slight pressure and there is a tendency for the air to escape at every possible opening, around the doors and windows as well as through the vent openings; on the other hand, when an exhaust fan is used in the so-called vacuum system it produues a slight suction or reduction of pressure in the rooms and flues and outside air will flow in wherever possible. The inflow of outdoor air into a room with a partial vacuum may cause objectionable drafts and cold floors, while foul air may find its way into such a room, as e.g. from a neighboring toilet room. In large buildings it is often necessary to use a fan at each end of the system in order to secure satisfactory results. The mechanical system is in many respects superior to the gravity system, as it is positive in its action regardless of weather conditions or the temperature of the air which it handles; it is usually more economical than would be a corresponding gravity system; the mechanical system can be adapted to any possible arrangement of buildings or combination of rooms and can be arranged in any desired size. Whenever this system is

Digitized by Google

used, however, it has to be carefully designed so as to be perfectly balanced, in order to give entire satisfaction; this is especially true if the exhaust system alone is used.

I have said nothing so far concerning the circulation of the air in the room to be ventilated, but this represents in many respects the most important feature of the entire system; without a proper circulation of the air in the room the entire system is a failure; you may pass an abundance of air through a room and the room may still be wretchedly ventilated through faulty circulation. For good ventilation it is necessary that the required amount of air be uniformly distributed through the room at the breathing line; that is, about four feet from the floor; and this is not an easy thing to secure without careful planning. The air will follow the shortest line allowed from inlet to outlet, and it is necessary to force it to travel the greatest possible distance if all parts of the room are to be reached.

There are two methods of circulating the air through a room, known as the upward and the downward. In the former, the warm fresh air is admitted at the floor level and immediately rises and escapes through vent openings in the ceiling; in the latter the air is admitted near the ceiling and withdrawn through vent openings at the floor level. The upward circulation has in its favor that it is in the direction of the natural movement of the air in the room due to the heat of the incoming air, the temperature of the expired air and bodily heat of the occupants of the room and heat from possible gas jets, all tending to push the air toward the ceiling. There are, however, two serious objections to the method for general use; it is wasteful of heat and increases the expense of warming the room through the losses of heat at the ceiling, and it gives poor ventilation through imperfect distribution of the fresh air, which immediately on entering the room rises to the ceiling instead of diffusing itself through the room. If, in this case, the fresh air enters through one or two registers only, there are large stagnant spaces in the room submerged in vitiated air; to overcome this difficulty, the air must be admitted through numerous small openings distributed all over the room. This is only possible in rooms having fixed seats, such as theatres and churches.

In the downward system of circulation, some force has to be developed in the room sufficient to overcome the tendency of the fresh warm air to remain at the ceiling level, and the upward movement of the air in the room from the respiration and animal heat of the occupants. This force is produced by lowering the temperature of the air through utilizing the cooling effect of outside walls and window surfaces; in rooms of moderate height and supplied with the necessary cooling surfaces this method can be satisfactorily operated, and hence is the method commonly adopted for schoolroom ventilation and, to a considerable extent, for other buildings. It is not so easily operated, although sometimes used, in theatre ventilation, for example, where the room is very high, outside walls and window

Digitized by Google

surfaces often lacking, and where there is the strongest tendency for the air to rise on account of the temperature from respiration and the animal heat due to the very compact seating of the audiences. The fan system of ventilation is generally necessary for such work, the fresh air either being introduced or withdrawn through openings in the seat standards or small registers in the risers of the floor, depending on whether the upward or downward method is used.

The important factor in controlling the circulation of the air through a room is the location of the fresh air inlet and foul air outlet. To illustrate this let us take the case of an average schoolroom where the ceiling height is twelve feet. Long experience with schoolroom ventilation on the downward circulation system has demonstrated that a satisfactory location for the fresh air inlet is about eight feet (at the bottom of the opening) above the floor, on an inside wall, but near an outside corner of the room, for the usual condition of two outside walls. The foul air vent for the same room should be in the same wall at floor level, but near the inside corner. With this relation between the openings the fresh warm air will flow along the ceiling until, chilled by contact with the windows and outside walls, it will descend and circle or sweep across the room to the foul air vent, but reaching in its passage all portions of the room. Let me here call attention to the fact that the foul air is withdrawn from the bottom of the room, not because of the old idea that the carbon dioxide in the vitiated air would settle at the bottom of the room or bring the foul air to that level because of its greater specific gravity, but rather because of the cooling of the fresh air as described above and the consequent forcing of the foul air to the floor level. Under natural conditions the carbon dioxide rises toward the ceiling diffused in the vitiated air, its greater weight being offset by the temperature of the expired air.

If the foul air vent is placed opposite the fresh air inlet, the incoming air will flow across the room to the opposite wall and descend and pass out the vent opening; there will be no ventilating, as the stream of warm air will pass over the heads of the pupils between the openings and there will be no circulation through most of the room. If the vent opening is placed in an outside wall, it will withdraw fresh air from the room for the reasons stated above. If a room is long and narrow, and has three outside walls, the warm wall being a short side, the inlet and outlet should be one over the other in the center of the inside wall. If, instead, the inside wall is one of the long sides of the room, there should be two warm air inlets in this wall near the corners and a single outlet in the center of this wall. The relative positions of these openings, then, should be varied to suit the exposure and conditions of the room in question. There can be no definite rule that will apply to all rooms under all conditions, and local arrangements of buildings often interfere with carrying out ideal plans. I wish especially to emphasize the fact that you

Digitized by Google

cannot secure the satisfactory ventilation of a room, no matter how many openings you provide, unless you give careful consideration to the manner in which the air is to circulate through the room.

The heating of a building is intimately connected with the ventilation, as it is necessary for the greater portion of the year to raise the temperature of the outside air before introducing it into the building, and the heating plant may also be used to furnish the motive power for the circulation of the air through the building. The heating and the ventilating systems should therefore be designed and installed at the same time. This paper is not intended to discuss methods of heating, but a brief outline of the relation of the different methods to the ventilation may assist in further explanation of the ways and means of ventilation.

There are three methods of heating the air of a room: direct radiation, where the heater is placed in the room and is not connected with any ventilating arrangement, such as the common stove or the steam or hot water radiator; second, the so-called direct-indirect heaters, where the heater is still retained in the room but fresh air from the outside is passed over it and delivered into the room; the jacketed stove or the ordinary direct-indirect radiators are of this class; third, indirect heaters, where the heater is without the room but the outside air passes over it and so into the room; the common hot air furnace and either steam or hot water indirect radiation are examples of this class.

The simplest heating system that we have is the ordinary stove placed in the room as in the small single room schoolhouses of the country districts. Here the same air is heated over and over again and there is no ventilation. To provide the latter, a galvanized iron jacket should be placed around the stove, a fresh air duct of the same material should be constructed under the floor from an opening through the foundation wall, the air being delivered under the heater within the jacket. The foul air should be removed through a vent opening at floor level in a flue utilizing the heat from the smoke pipe to create the draft. The fresh air opening in the wall should be protected by a grating and provided with a damper so that the inflow of fresh air can be controlled. An opening should also be provided at the bottom of the jacket in case it is desired to rotate the air of the room, for example, in heating the room before use in the morning. Good judgment is needed to so locate the stove that all parts of the room will be equally supplied with warm fresh air. This involves a study of the probable circulation from different positions.

An excellent arrangement can often be made by placing the heater in a small room adjoining the schoolroom, the air being delivered near the ceiling. This has, however, the very serious objection that it offers no opportunity to warm the feet of the pupils, which is an important matter on a cold winter day.

The hot air furnace, so familiar to us all, is designed to deliver warm,

Digitized by Google

fresh air into the rooms it supplies, and so combines heating and ventilating, provided the foul air has a chance to escape from the rooms. That it cannot always be depended on to do all that it is designed, is also familiar to us. If this form of heater is used it should have an ample fresh air supply delivered through an airtight galvanized iron or masonry duct, so that there may be no leakage of cellar or basement air. The warm air should, for the class of buildings under consideration, be delivered through wall registers whenever possible. Floor registers should never be used in ventilation work if they can be avoided, as they are decidedly unsanitary. Anyone who doubts this had better examine the register boxes or ducts in any old public hall or country store furnace heated. It is astonishing how the dirt and filth of all character acuumulates in these places; over this filth the fresh air supply for the room has to pass. Whenever it is necessary to use floor registers they should be frequently inspected and cleaned.

The air delivered from a hot air furnace is frequently too hot and too dry for comfort; the latter can be overcome by evaporating the necessary amount of water, not, however, without making special provision for this. The extreme heat is due often to the use of a furnace of too small size and the consequent need of forcing it. The ventilation feature of such a heater can be improved by by-passing the cold air around the furnace through connections made with each of the warm air supply pipes; such connections should be supplied with suitable dampers, so that air of any desired temperature can be delivered into the room. This arrangement, also, permits the use of the heating system for supplying fresh air and continuing the ventilation work when the heater is not in service during the warm weather.

The direct-indirect method of heating, by the use of steam or hot water radiation, is frequently used for ventilation work, either alone or in combination with other methods. As ordinarily fitted up, steam coils or the special direct-indirect radiators are placed against an outside wall, frequently under a window, and connection made through the wall from the base of the radiator. The outside air can then enter, and passing over the radiator, be delivered at the top in a heated condition; the escape of the air being controlled by the construction of the radiator or an outside casing. A damper is necessary to control the inflow of air. It may be desirable, in some cases, to provide a second damper so aranged that the air from the room may be passed over the radiator, to assist in rapid warming of the room before it is put into use; but such a damper should always be closed when the room is occupied. In order to prevent possible overheating of the room, such radiators are sometimes equipped with a device for passing cold air back of them with a mixing damper at the base, so that the temperature of the air as delivered can be controlled. For effective ventilation by this method ample provision must be made for the removal of the foul air, as the force with which the

Digitized by Google

fresh air enters is very feeble. For the same reason, this system is easily affected by adverse wind conditions and is not alone as reliable as other methods of ventilation.

The indirect method of heating and ventilating is very largely used, especially for schoolhouse work; the heating may be solely by this system or, more commonly, combined with a certain amount of direct heating. The heating surfaces are here placed in the basement, the fresh air is brought in from the outside through suitable ducts or chambers, passed over these surfaces and then delivered through the hot air flues to the various rooms. The buildings where this method is used are commonly steam heated, and the heating units are made up of steam coils or indirect radiators of capacity suited to the different rooms. A separate indirect stack with its cold air supply and hot air flue is generally used for each room. If the mechanical system is used for the circulation of the air, the heating units are combined into one group of steam coils through which the air is drawn or forced by the fan; main ducts with branches to the different rooms then distribute the warm air. Steam heated exhaust flues are used for removing the foul air unless an exhaust fan is necessary. The indirect method of heating and ventilating, if properly designed, can give entirely satisfactory results but careful planning is absolutely necessary, or failure is sure to follow in part or all of the system. I wish to strongly emphasize this point, because it is not commonly appreciated. Expert advice is necessary in planning any system of ventilation, and the more complicated the system the more necessary this becomes.

Whatever system is installed for the ventilation of a building, it should be well equipped with appliances for controlling the movement of both the fresh and foul air, to suit the demands of the different rooms, or to meet the variations in weather conditions. Dampers should be supplied at all fresh air inlets to the building and at the top of the foul air exhaust stack, to shut off the circulation through the building and consequent loss of heat when the building is not in use. Dampers should also be provided for each of the warm air flues and at the foul air vent for each room, so that the flow of air through these flues can be controlled.

No system of ventilation should be considered satisfactory if it can be interrupted by the method used for controlling the heat of the room. In case a room becomes overheated and it is necessary to close the registers admitting the warm fresh air from the furnace or the indirect heating stacks, the ventilation is shut off with the heat; no air can leave the room by the foul air exhaust unless it is entering at some other point of the room.

There are two possible ways of controlling the temperature of the room; one is by cutting the heat off from the heating surfaces either partially or completely; the other is to reduce the temperature of the inflowing warm air by mixing cold air with it. Both methods may be arranged to

Digitized by Google

work automatically, or be operated by hand. The method of mixing the air supplies is now generally adopted for ventilation alone. The cold air is mixed with the hot just inside the stack or heater; a combination damper is so arranged that either hot, cold or mixed air can be supplied by the movement of the single damper. Such a damper is usually operated in schoolroom work by a chain leading to the register face in the room and hence is under the teacher's control.

A uniform temperature in a room is so desirable for the health and comfort of the occupants that automatic methods for controlling this are rapidly coming into general use. All such devices are not reliable, but the best of them can be depended upon to give much better satisfaction than attempts at hand regulation. No ventilation system for a public building, however well designed, will give satisfactory service unless it is placed in charge of a competent man who thoroughly understands the system, and is interested in operating it at its highest efficiency. The average janitor knows nothing about ventilation, and is indifferent to its value; he is solely concerned with the heating side of his plant. No heating and ventilating plant will run itself, no matter how well supplied with thermostats for automatic control.

There is especial need for careful supervision in the ventilation of our school buildings, in order that the pupils may do their work under the most favorable conditions for comfort, health and efficient work. Many of these buildings, especially the smaller ones, do not have a competent janitor or engineer on the premises all of the time, who can give attention to the proper operation of the ventilation system; in others, while such an official may be present, his services in this respect may be of little value. Very often the entire responsibility for the ventilation of a room is placed upon the teacher in charge of the room. This is proper, but frequently the teacher knows nothing about the principles of ventilation, nothing about the details or general arrangements of the particular system he or she is supposed to operate, and consequently, the children suffer through a wide range of temperature, and may, or may not, get the necessary amount of fresh air. Moreover, the teacher in the room is not in the best position to judge of how impure the air of a room may be, as the condition changes gradually. A person passing into the room directly from the outside air, at once notes a foul air condition that the teacher in the room has not discovered.

For the more efficient ventilation of our school buildings, I believe that all teachers should be given instruction in the importance and need of ventilation and the general principles governing it. The principal or head teacher should have, as part of his duties, the supervision of the ventilation system and should frequently pass from room to room to see that it is operating satisfactorily. Each teacher should thoroughly understand the kind of system with which the building is equipped, how it operates, and what she is to do to secure satisfactory conditions in

Digitized by Google

her own room. These suggestions are not designed to relieve the janitor from any of his duties, but rather to see that he does them more effectively.

I think that in the same manner the ventilation of our other public buildings, especially the churches and theatres, should not be left in the janitor's hands without supervision on the part of some officers or committees, We ought not to expect the people to fill the church pews if they are to suffer the discomforts of a foul atmosphere. The man who pays for a seat in the theatre should be entitled to occupy it under conditions of comfort, health and safety.

The question is sometimes asked what can be done temporarily, perhaps, to improve the condition of the air supply of a room where no ventilating system exists. I would suggest that each day or time before such a room is used the doors and windows should be opened and the room filled with fresh air, which should then be brought to the necessary temperature before the audience enters. When the audience leaves the process should be repeated and the foul air thoroughly cleared from the room before it is closed. The present custom of shutting up a hall or church as soon as the audience is out, and so confining within the room all of the vitiated air until the room is used again is decidedly objectionable. During this time all of the dust and germs and matter in suspension in the air has settled to the floor and seats. It were better to blow this out of the room when it is stirred up by the movement of the audience in leaving.

In schools under the same conditions the windows should also be opened at recess and the room well aired so far as this can be done without interfering with temperature conditions.

When the audience is in the room fresh air cannot be admitted at the windows unless great care is taken to avoid unpleasant drafts. A window may not be opened wide, but if each window is opened slightly at the bottom there will be considerable leakage of air at the parting of the sash which may not cause any unpleasantness. There are some people who cannot feel a draft until after they have seen it. The familiar ventilating board with its holes or passages for deflecting the air may be used for the same purpose. It is difficult, however, to do much in the line of ventilation without heating the air that is supplied.

In closing, let me say that the work of providing efficient ventilation for the public buildings of any community is one of exceeding great importance. The work of the public schools can be done far easier and with less injury to the health of the pupils and teachers if carried on in a pure wholesome atmosphere. If the churches, theatres and public halls were all equipped with the means for a proper air supply, the public gatherings in these places would be larger, as we would no longer hear the compaints from those who now stay at home because they cannot stand the air in certain buildings. Nor, on the other hand, would we witness the now familiar sight of the sleepers in church submerged in

Digitized by Google

the warm, dead atmosphere, nor hear the complaints of the headaches brought home from the same place. Public gatherings deserve better conditions. There is an abundance of fresh air out of doors. It only needs intelligence, public spirit and energy on the part of some one or more in each community to place this within the reach of the public gatherings within doors.

DISCUSSION.

Dr. C. O. Probst, Columbus, Ohio.

I don't think I have anything to add to what has already been said, but I would like to emphasize the excellent suggestions of the speaker in regard to the ventilation of our country schoolhouses which, of course, is best accomplished by the introduction of fresh air beneath the stove surrounded by a jacket with a suitable outlet for the foul air. This is a very simple way to ventilate a schoolroom. The fresh air should be conveyed from without the building through galvanized iron pipes to a space under the stove. This will admit an abundance of fresh air and the air in winter will be warmed by passing over the stove.

The speaker also suggested the advisability of airing public buildings immediately after the assembly has vacated the building. This is true of churches, school buildings, town halls, etc. Nothing can take the place of opening all of the doors and windows immediately after the rooms are vacated. This should also be done during recess. Children are growing and need the fresh air and this suggestion ought to appeal to every health officer in the country.

Dr. Henry D. Holton, Brattleboro, Vermont.

I happened to be riding through a town down my way one day and saw the foundation for a building. I inquired what was to be built there and found the village was about to erect a school building. The old building had burned down. The law says all plans shall be submitted to the State Board of Health for approval. I sent out the rules and regulations to the trustees of that town as soon as I returned to my home and I also sent a copy to the health officer. I heard nothing from them up to within two or three weeks ago. They had the building up. Evidently some one had said something to them about complying with the law. However, they had the building up and ready for finishing. They had failed to provide for ventilation; there was insufficient light. Two of the committee came down to see me and asked what they could do concerning the matter. I said, "All you have got to do is to put that school building in accordance with the rules and regulations which I sent you as soon as I discovered you were about to erect a school building." They said: "We have about used up our appropriation; what can we do?" I said:

Digitized by Google

"I don't know. If you do not comply with the rules and regulations and go ahead and finish your building in the way you have started, we shall have to condemn it." Immediately he said, "Well, it will cost us a good deal." "Well," I said, "it wouldn't have cost you much more to have it put up properly than it has to erect it the way you have." Then they asked me to modify the rules a little, seeing they were in such a fix. I said: "No, I can't do that. I did not make these rules and regulations and I can not change them." They are putting that building in proper condition and it is going to cost them between seventy-five and one hundred dollars more than it would have if they had obeyed the rules sent them when they started out. You, gentlemen, are the guardians of the health of your towns. It is your business to see that everything, so far as the health of the town is concerned, is going right. You are not to blame for having these laws enacted. They are the laws of the State of Vermont. You are to see that they are obeyed. When any one grumbles about the way you are obliged to carry them out, just ask them if they will pay your fine if you neglect your duty. I don't think they will be willing to.

TUBERCULOSIS.

By J. H. Huber, M. D.

I am going to divide the subject of tuberculosis into four parts. First, the germ; second, the mode of invasion; third, the prevention; fourth, the cure.

As many of you are not medical men, I am going to make my talk elementary. We make a distinction between contagious and communicable diseases. Tuberculosis is a communicable disease. The difference is just this. If you are sitting next to a person who has measles or scarlet fever, I can not promise you will not contract the disease; but if you live all your lifetime with a consumptive, a careful consumptive, mind you, you need not have the disease. That is the difference. Tuberculosis and these other diseases are infectious, they have certain germs for their specific cause.

Pulmonary tuberculosis is not a new disease. It has been known as far back as the memory of man extends and has unceasingly decimated the race for hundreds and hundreds of years. Tuberculosis is prevalent among the lower animals as well as the human race. Animals excrete the bacilli through the fæces, the urine and purulent secretions, as well as by milk, and there is still some danger from the meat itself. Pulmonary tuberculosis is quite prevalent among pet animals, but these, of course, are killed as soon as the disease is manifest, thus doing away with contagion. It

Digitized by Google

has been calculated that a tubercular patient can produce in a single day several millions of bacilli which, if allowed to become dry, rapidly infect others of the household, workshop or factory.

This picture represents the bacilli.

Whenever a germ of any sort gets into a body which is predisposed, it plants itself in the tissues of the body and if conditions favor it, it multiplies as this picture demonstrates. This shows you a bacillus in the middle and breaking up into two parts and this is the multiplication of the germ which I have just spoken to you about. This germ has found a favorable ground for its growth and that is the way with all the germs. They simply need a favorable location for implantation.

Koch discovered this bacillus twenty-five or six years ago. It may seem rather odd to may of you that this germ was not discovered before that time, for, as I have said, tuberculosis has been with us as long as there has been a human family. The monkeys and apes are the most tubercular of animals. Evolutionists say mankind descended from them, consequently we can understand why there is more tuberculosis among the ape family than any other family of the animal kingdom. We wonder why this germ was not discovered sooner. There are two reasons for this. The first reason is—there never was so great a genius as Koch; and, second, we never had an instrument powerful enough to discern the germ which is so small. You will remember that I have said several million of these bacilli are coughed out in a single day.

We speak of tuberculosis the same as consumption. This picture which is now before you, shows up the human lung, with normal human trachea and the air vessels in which the gases concerning respiration are exchanged. This picture shows you the tubercle bacilli located in the larynx with the pearly nodules in the epiglottis which has become so enlarged it is difficult to see the nasal cords. This is tuberculosis of the larynx. This shows the bronchi with tubercular necrosis. Oftentimes with incipient tuberculosis, before the apices are involved, you will find this condition at the root of the lungs. This shows the upper lobe of the lung which is caseous. This shows a broken-down tubercle. This shows the cavity broken down and the pus containing uncountable numbers of bacilli coughed out.

Laymen think when we speak of consumption, that it must be tuberculosis or consumption of the lungs. That is not necessarily so, for we may have tuberculosis of almost any part of the body. We may have tuberculosis of the lungs, trachea, bronchi, kidney, spleen, liver and I might go on and name many other parts of the human body which are heir to tuberculosis. No part of the human anatomy is exempt from tuberculosis. We may have tuberculosis of the joints and of the bones and of the glands.

Every community, even Montpelier, Burlington, etc., shows the dreadful conditions existing among tubercular families. But the rural conditions

Digitized by Google

can not stand in the same atmosphere with the conditions prevailing in the large cities.

This shows the famous Lung Block of New York City. This shows you how very important it is that cases of tuberculosis should be registered with the health boards in order that, after the death of a patient, the rooms occupied by that patient may be fumigated. Also when a tubercular patient moves out of one block and into another, the rooms occupied in the former may be disinfected and taken care of before another family occupies that apartment. This house which I am showing you is not a very large house, but you will note there have been eleven deaths from tuberculosis in one year.

This is a picture of the children occupying rooms in the block. You will note the pale drawn faces, the open mouths, caused by adenoids, and if not taken care of, the child becomes a field for the implantation of the germ of tuberculosis and a candidate for the disease before he reaches his fifteenth year.

As I understand it, Washington has a model tenement system, such as we have in New York. The poor people have to pay their rent every year, but one month's rent is used for cleaning up the premises, for repairing, repapering, etc., and if the apartment does not require these expenditures, it is turned back to the lessee as a rebate.

In New York we have a great deal to do as regards alcoholism. I know as far as I am concerned with charitable hospitals and with the city hospital at Blackwood's Island, in the male wards, one half of the consumptives are chronic alcoholics and we have found dreadful conditions prevailing all along these lines. These men drink the first thing in the morning and then have another drink during the forenoon. These men take alcohol in enormous amounts. I have known of one man taking a quart before starting for his work in the morning. This factor is a very predisposing one. Another great proposition which we have to deal with in large cities, which you have nothing to do with in rural communities, is the overcrowding. We have in New York the most overcrowded condition in the world. You can easily understand how the people living together, constantly breathing obnoxious gases, become predisposed to tuberculosis. For everything which weakens the body is a predisposing factor.

Tubercle bacilli may enter the human body by these three ways: 1, by being inhaled—breathed into the lungs; 2, by being ingested—eaten with tuberculous food; 3, by inoculation—that is the penetration of tubercle bacilli through the broken skin or a wound.

One naturally thinks if the germs are spit out in such enormous numbers, the first thing is to dispose of the sputum. There are all sorts of receptacles for storing sputum, etc., until finally burned, and if such receptacles are constantly washed and kept clean and disinfected and the sputum expelled by the patient carefully disinfected or burned,

Digitized by Google

there is very little danger. One of the first symptoms of a tuberculous infection of the lungs is a cough. It is so constant an accompaniment of this disease, that even the laity appreciate the significance of an obstinate cough. A great many carry the belief that bovine tuberculosis is not injurious to human beings. In that memorable congress of 1901, Koch did not declare that human beings could not contract tuberculosis but he stated that it was rare for such contraction. Human beings may be infected with bovine tuberculosis. During that congress Koch said: "I have never denied that bovine tuberculosis can occur in human beings." Nevertheless, Koch has been looked upon as the ally of those who want to sell contaminated milk and diseased meats. I want to impress upon your minds so that you can carry this idea, which is correct, back to your towns, that Koch never said that human beings could not contract bovine tuberculosis.

Another proposition which physicians have to contend with and that is adenoids and hypertrohpied tonsils. A great many of our New York children have adenoids and hypertrophied tonsils. We had a riot not long ago in New York among the mothers of the school children. They declared that they believed the doctors were going to school and cutting the throats of the school children. We examine the throats of the children attending the public schools and if we find trouble, we write to the mother and state that her child has adenoids or hypertrophied tonsils, as the case may be, and advise the mother to take the child to the family physician and also state, if they can not afford this expense, take them to the charity hospital and have the trouble remedied. If the children are allowed to go on with these troubles, they are very apt to contract tuberculosis when they have reached the age of fifteen years if they do not do so earlier in life. Every three out of four adult white lives have been sacrificed to the plague—tuberculosis. Fish of Yale, who was a tubercular patient himself, and who has recovered, states that it has cost us over some odd million every year. During the last fifteen years we have improved in our tubercular death rate, but the reduction has not been enough. We must work harder. Flick of Philadelphia, like Trudo and Fiske who were cured while young, declares if our tuberculosis propaganda accomplishes what it has in the fifteen years just past, we shall see tuberculosis as rare as a case of leprosy.

Consumption may be cured by these five factors: 1, disposition of the sputum; 2, rest; 3, air and sunshine; 4, good food; 5, medicines as the physician directs.

I hope no one ever uses patent medicines hoping to be cured. A tubercular patient might better spend that amount of money for a bottle of pure water. It would do him lots more good than any patent medicine on the market. Patent medicines contain large quantities of alcohol.

The importance of notification and registration of cases of tuberculosis can not be too strongly impressed upon your minds. All premises once inhabited by a tubercular patient should be properly disinfected. Fifty

Digitized by Google

per cent die who have tuberculosis, consequently you can see the necessity for keeping the location of these patients in view and immediately cleaning up the premises after the death.

This picture shows the staircase in the Lung Block, where the inmates spit on the stairs and the sputum dries and blows about the hall and into the living rooms. This is a pest hole for disease. There are between three hundred and fifty and four hundred dark rooms in this block. We have much to contend with in the housing of the working class of people. There are three families living in these three rooms. They get along all right until they start to taking in boarders and then the trouble begins.

This picture is one of the moderately clean rooms. It has a history of a family in which there was a young girl who worked in a factory next to a girl who was suffering from tuberculosis. Finally this girl began to show symptoms of tuberculosis and went to a doctor. The doctor said: "My child, you have tuberculosis." She died in this room. Her father, who was a drunkard, contracted the disease and died, and later her mother contracted the disease from the husband, and also died. You know that even now it is said by the laity that consumption is hereditary. Practically speaking, parents can not transmit the germs to their offspring. It is in reality a house disease. The tubercular father sits reading his evening paper and expectorates on the floor where the baby boy is playing. The sputum dries and is inhaled by the baby or his toys get into it and they are taken by the child to his mouth and the germs are inhaled by the infant.

On my way up I visited the institution at Pittsford. The sanitarium is an ideal one. While a patient is in a sanitarium, he is not infecting his family and neighbors. When he gets away, he is a sort of a missionary, and goes out into the world able to take care of himself and also to take care of his excreta and prevent the spread of the disease. We can not have enough institutions of this sort to treat all the cases of tuberculosis. Ninety per cent of these cases have to be treated in their homes. A case can improve and get well in Montpelier just as well as in any other town in the state.

Dr. F. E. Clark, Burlington, Vt.

I think, after the very strenuous day which we have had, that it will be imposing upon your good nature if I should attempt to discuss at length the subject which has been assigned to me this evening.

My talk will be purely extemporaneous and if I had any written discussion I should most certainly keep it in my pocket and not tire you with the same.

My only hope is to accentuate a few facts with which you are all familiar and which have been suggested in the papers of the evening. In the language of our honest country friend, "Tuberculosis aint what it used to be." This recalls to my mind the story of two old Reubens who frequented the steps of a country store, always chewing tobacco, and

Digitized by Google

are experts in the science of spitting, for they could engulf a fly with a deluge of tobacco juice at a distance of eight feet and never miss the mark. Abe says to Rube: "There goes John Smith. Well, John Smith aint what be used to be." "No, be gal," says Rube, "and he never was."

Scientists have been so energetic in finding out or seeking the cause of why we are ill, that they have neglected to ask themselves that still more important question, Why are we well? We have been building up step by step, for many years, the germ theory of disease. Now we are supplementing this with the happier or more valuable philosophy, the germ theory of health. Preventive medicine is by far more rational than curative medicine, which at best is but an implement of last resort. It must have occurred to you that with all the germs we have been told about during the past two or three days, and their dreadful results, that we not only live in the midst of death, but death lives in our midst. Our bodies are a battleground between the invading legions of disease and the defending army of health. I tell you, ladies and gentlemen, that the wonder is, not that we are ever ill, but that we are ever well. I am afraid if scientific men keep persistently and everlastingly working to destroy the cause of disease, that very soon you and I will be out of business. They are attacking and chasing every pathogenic bacteria or bacillus that causes trouble, and are starting it on the run. I understand that the undertakers are turning a cold shoulder toward us because we are so persistently trying to kill the goose that laid the golden egg. With the State Board of Health, the local boards of health, and the health officers, working and fighting every disease germ, what is the poor country doctor going to do to get a living? These are serious questions which perhaps deserve some consideration and how soon will the town, county, or state, take some measure to remunerate the doctor for his untiring efforts along the lines of preventive medicine?

There are two things which every family and every community should endeavor to secure: first, to get clean; and, second, to keep clean. There are individuals who are obliged to take a bath to get clean; there are other individuals, better versed in sanitary science, who take baths to keep clean. It is perfectly obvious to which class we would all rather belong and this is perfectly applicable to the community as well as the individual. Cleanliness is the keynote in the prevention and cure of consumption. Nature has endowed us with many protective elements and so long as we keep them in normal condition, they will protect us and preserve us from infection. Germs are powerless to harm a healthy individual. To this I believe there are few exceptions if any at all. It then remains for us to so live and learn the laws of health as to keep our bodies up to par. As we come to know more of the great dangers to the human family, by these invisible living organisms we call germs, or microbes, of disease, we are appalled at the fact that the great Creator ever put us into the world without endowing us with a power to guard

Digitized by Google

against infection and contagion. This natural resistance most certainly was a part of His great plan in the creation of man. The natural forces with which nature has organized to defend us, make it possible for us to so equip our defending forces that the most dangerous enemy can not prevail against us.

As we study the pathological changes of tuberculosis, we see two important processes always present. First, on the part of disease, there is death and destruction of the tissue. On the part of nature, there is regeneration, construction, proliferation and repair. If nature is given half a chance in the incipient stages of consumption, she will protect the human being by eradicating the disease nearly every time. So long as the constructive or regenerative processes overpower the destruction on the part of the disease, there will result a cure. But if by careless wasting of all the vital forces the destruction gets a foothold and overcomes regeneration or proliferation, then the patient goes down and out as the result of the terrible ravages of this fearful disease. Thousands of people every year sacrifice their lives to this dreaded disease by not conserving all the vital forces in the healing processes.

Let me accentuate the fact that tuberculosis is not only preventable, but is a curable disease. Benefit if not actual cure may be expected by every incipient case if taken in time.

There are three essential facts to be ever kept in mind in the cure of this disease. First, rest, both mental and physical, that all the vital forces may be concentrated in the healing process. Second, good wholesome and nutritious food; all that one can take. Third, fresh air, twenty-four hours a day, and sunshine as much as possible. Fresh air and sunshine are nature's greatest disinfectants. We may minimize the amount of dust but we can never prevent it altogether. Fortunately nature steps in here and solves the dust problem. If we flood our homes with sunshine in the morning, at mid-day and in the afternoon, together with a liberal supply of fresh air, we need have little fear of the ravages of the dust germ.

We have been taught in physics that the sun is the great giver of heat and energy; that its ray of light has chemical properties that are all important to both animal and vegetable world, but let me tell you that the sun is nature's greatest disinfectant which makes possible man's habitation upon the earth.

With reference to the diet of the consumptive, we find that one all important article of food is milk. We have listened to a most able and instructive paper on this subject by Professor Jordan and I want to thank him personally for the valuable suggestions contained therein, for I am free to admit that milk sold in many of our small towns and cities contains more bacteria per ounce than does sewage. One teaspoonful contains more millions of inhabitants than are found in all Greater New York. Let me tell you, ladies and gentlemen, that every particle of this filthiness and deadliness is of our own making, the well-earned and richly

Digitized by Google

deserved wages of our greediness, carelessness and filthiness. Thus you will see that ninety times out of every one hundred poor bossy and her milk are as innocent as they look and appearances here as elsewhere are not deceitful except where man has had a finger in the pie. What can you gentlemen do about it in your several communities? Are you to remain quiet and let this nectar of the golden age of childhood be mentioned in the same breath with sewage? Sad to say it, but its very whiteness may become the deadliness of innocence and its creamy opaqueness a screen for hiding all sorts of horror of your own making. Is it any wonder, then, that we should be aroused to the subject of a pure and wholesome milk supply? When you have furnished your community with a pure milk supply, and a pure water supply, and have taught your tubercular patients how to care for themselves, and to prevent infecting others, you will have performed a duty which can never be repaid by the community in which you live, but you certainly will reap your reward in the hereafter.

Dr. H. D. Holton.

I want to give you one or two facts relative to the matter in this state. The mortality from tuberculosis has diminished fifty per cent during the last twenty-five years. In 1885 there were over 1100 deaths in this state from tuberculosis. This last year, 1908, there were 430 deaths. A law was passed by our legislature in 1902 which makes it compulsory that all cases of tuberculosis that come under the observation of a physician should be reported to the Secretary of the State Board of Health within one week. This is not for publication, but for the purpose of sending literature regarding the prevention of the spreading to other people. Last year out of 430 deaths, 225 cases were reported to the Secretary's office. Not all of this number, 225, were reported until I had written them. I watch the newspapers and this aids me quite a bit, as I frequently notice a person is suffering from tuberculosis and by going to my record cards find that case has never been reported. I immediately write the physician, if I know who he is, if not the health officer. Why are not those cases reported? First, the doctor does not dare tell his patient he has tuberculosis. The family do not want the patient to know what the trouble is. I receive quite a few letters in which is "the doctor says if you have any literature to send, don't send it to the patient, but send it to me, because the patient doesn't know what the trouble is and we would not have him know it for the world." I write in reply that they are losing one of the greatest aids in the cure of that patient.

I wish the health officers would see the physicians and ask them if they have any cases of tuberculosis which they have failed to report to the Secretary's office. Tell them if they want to do their part toward saving the lives of their patients, the first step toward that end is reporting

Digitized by Google

the case. We have a sanitarium at Pittsford for incipient cases. One reason we have so many advanced cases is, the doctor is not called in until the patient has reached the third stage. I am satisfied that many certificates of death that come into my office with the cause of death chronic bronchitis should be tuberculosis.

Impress upon your neighbors and friends the necessity of watching for the first symptoms. Take for instance a girl along fourteen or fifteen years of age; she looks pale; does not eat; has lost strength. There is your chance to prevent a case of tuberculosis. Vigilance is the price of life.

SPECIMENS EXAMINED AT LABORATORY OF HYGIENE, FIRST QUARTER, JANUARY, FEBRUARY AND MARCH, 1910.

Ground waters:		
Normal	34	
Showing present pollution	4	
Showing past pollution	25	
Showing past and present pollution	16	
Surface waters:		
Normal	39	
Polluted	23	
Total		138

SPUTUM FOR TUBERCLE BACILLI.

Male:		
Positive	51	
Negative	188	
Female:		
Positive	45	
Negative	157	
Sex not stated:		
Positive	5	
Negative	11	
Total		457

CULTURES FOR DIPHTHERIA BACILLI.

Positive	358	
Negative	2135	
Suspicious	1	
Total		2493

Digitized by Google

BLOOD FOR WIDAL REACTION.

Positive	43	
Negative	126	
Total		169

MILK AND CREAM.

Above standard	160	
Below standard	105	
Total (detail table following)		265

SPECIMENS EXAMINED AT LABORATORY OF HYGIENE.

FOODS.

Above standard	162	
Below standard	33	
Unclassified	9	
Total (detail table following)		204

MISCELLANEOUS ANALYSES.

Positive	52	
Negative	105	
Unclassified	—	
Total		157

LIQUORS SUBMITTED BY LICENSE COMMISSIONERS AND SELECTMEN.

Passed	36	
Not passed	17	
Total		53

LIQUORS SUBMITTED BY SECRETARY OF STATE.

Passed	9	
Not passed	1	
Total		10

DRUGS.

Legal	15	
Illegal	12	
Total (detail table following)		27

MEDICO-LEGAL CASES (DETAIL TABLE FOLLOWING).

Total number of examinations made	19
Total number of examinations made during the quarter,	3992

Digitized by Google

Milk—Below Standard

Specimens Examined at the Laboratory of Hygiene during First Quarter, 1910

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
77726	1-18-10	H. F. Hill	Waterbury	14.8	9.6	5.2	Dirty	
77727	"	M. Hill	"	14.4	10.0	4.4	"	
77729	"	R. J. Barber	"	13.8	9.1	4.7	Very dirty	
77730	"	W. Woodward	"	13.2	8.8	4.4	"	
77736	"	G. E. Moody	"	13.0	9.0	4.0	Dirty	
77738	"	J. R. Arkley	"	13.5	9.5	4.0	"	
77741	"	J. W. Preston	"	13.9	9.7	4.2	"	
77742	"	G. W. Pearson	"	13.2	9.3	3.9	Very dirty	
77743	"	H. Downey	"	14.1	9.8	4.3	Dirty	
77746	"	B. R. Demerritt	"	13.8	9.4	4.4	"	
77752	"	Mrs. F. X. Ladoux	"	14.5	9.5	5.0	"	
77753	"	W. J Howland	"	12.1	8.8	3.3	"	
78631	2- 4-10	J. A. Thwing	Westminster	(15.5)	(9.2)	6.3	"	Unmixed sample containing much sediment.
78635	"	Eugene Clark	"	13.6	9.6	4.0	"	
78636	"	A. S. Powers	"	11.8	9.2	2.6	Refractometer—normal	Low in fat—skimmed.
77759	1-18-10	F. E. Holbrook	W. Derby			16.0	Very dirty	Heavy sediment. Top sample—unmixed.
77760	"	Geo. Herrick	"	14.5	9.8	4.7	Dirty	Much extraneous matter.
77761	"	E. C. Blanchard	"	13.0	9.6	3.4	"	Sediment and chunks of dirt at bottom
77762	"	F. A. Hayward	"	15.3	9.8	5.5	"	Excellent chemically but much sediment.
77970	1-24-10	Bourne Creamery Co.	Burlington	13.2	9.2	4.0	"	" " " " "
77974	"	A. Mowsowitz	"	15.2	8.9	6.3	"	
77975	"	Mrs. F. X. Saltus	"	13.2	9.0	4.2	"	Soule No. 1.
77976	"	"	"	13.4	9.0	4.4	"	Soule No. 2.
77990	"	E. R. Rockwell	"	12 7	8.8	3.9	"	
78117	1-25-10	A. G. Rice	Bellows Falls	12.9	8.9	4.0	Very dirty	Cook & Williams, producers.
78118	"	"	"	14.2	9.6	4.6	Dirty	Straw, hairs, etc. A. L. Mack, producer.
78119	"	"	"	13.7	9.5	4.2	"	J. A. Barron, producer.
78121	"	"	"	13.2	9.4	3.8	"	
78122	"	G. W. Peck	"	14.6	9.3	5.3	Very dirty	Chas. Spalding, "
78125	"	"	"	13.9	9.7	4.2	Extremely dirty	E. W. Ellison, "
78126	"	"	"	13.3	9.3	4.0	Dirty	A. Nelson, "
78127	"	C. B. Hume	"	14.0	9.4	4.6	"	N. Osgood, "
78128	"	"	"	13.8	9.0	4.8	Extremely dirty	This specimen very bad.
78129	"	"	"	13.7	9.5	4.2	Dirty	H. E. Richardson, producer.
78130	"	"	"	13.8	9.4	4.4	"	D. Taylor, producer.
78133	"	Hawley & Torrey	"	15.6	9.6	6.0	"	Straw and hairs at bottom of jar.
78343	1-28-10	C. B. Hume	"	14.6	9.9	4.7	"	C. M. Fuller, producer.

Digitized by Google

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
78952	1-28-10	G. W. Smith	Bellows Falls	14.5	9.8	4.7	Very dirty	E. Smith, producer.
78499	1-31-10	H. Westcott	"	14.8	9.9	4.9	Dirty	Geo. Haughton, "
78926	2-14-10	T. Ryan	Burlington	12.0	9.4	2.6	"	Low in fat—skimmed.
78928	"	E. R. Rockwell	"	12.2	8.95	3.25	"	Much sediment and barely passable in fat.
78933	"	T. Ryan	"	13.2	8.8	4.4	"	
77756	1-18-10	Richmond & Son	West Derby	15.6	10.2	5.4	"	Much sediment at bottom of jar. Excellent chemically but improperly handled.
77757	"	Benj Henman	"	19.0	8.6	10.4	"	Much sediment at bottom of jar. Top sample—unmixed.
77763	"	C. McClure	"	14.6	9.2	5.4	"	Excellent chemically but contains much sediment.
78120	1-25-10	A. G. Rice	Bellows Falls	13.2	9.4	3.8	"	Much sediment at bottom of jar and floating on milk.
79814	"	Edwin Cook	Poultney	13.1	8.9	4.2	"	No typhoid bacilli found.
79815	"	C. B. Cook & Son	"	13.0	9.0	4.0	"	" "
79816	"	Driscoll Bros	"	12.6	9.1	3.5	"	" "
79817	"	Thomas Power	"	12.8	8.9	3.9	"	" "
79818	"	James Durkee	"	12.9	9.4	3.5	"	" "
79819	"	Chas. White	"	13.1	9.4	3.7	"	" "
79820	"	L. V. Crosby	"	13.4	9.6	3.8	"	" "
79821	"	James Mathew	"	13.1	9.5	3.6	"	" "
79822	"	Stephen Larkin	"	12.6	9.3	4.3	"	" "
79823	"	Geo. Haines	"	13.4	9.2	4.2	"	" "
79824	"	James Strong	"	13.2	9.1	4.1	"	" "
79825	"	Pasher & Goodspeed	"	14.1	9.8	4.3	"	" "
79826	"	Chas. Sherman	"	13.2	9.4	3.8	"	" "
79827	"	James Holland	"	12.6	8.8	3.8	"	" "
79828	"	James Harney	"	12.3	9.05	3.25	"	" "
79829	"	Frank Reed	"	13.0	9.4	3.6	"	" "
79830	"	P. D. Ellis	"	14.3	9.6	4.7	"	" "
79831	"	Phillips Dalton	"	13.3	9.6	3.7	"	" "
79832	"	James Tyler	"	13.1	9.6	3.5	"	" "
79833	"	Clark & Reed	"	13.4	9.0	4.4	"	" "
79834	"	Geo. Parker	"	12.3	8.9	3.4	"	" "
79835	"	Ed. Brown	"	13.2	9.2	4.0	"	" "
79836	"	T. D. Chandler	"	12.7	9.2	3.5	"	" "
79838	"	W. A. Mead	"	12.9	9.3	3.6	"	" "
79839	"	R. R. Thrall	"	13.3	9.1	4.2	"	" "
79840	"	Williams & Co	"	13.2	9.4	3.8	"	" "
79841	"	Geo. Warren	"	13.1	9.2	3.9	"	" "
79842	"	S. H. Martin	"	13.2	9.2	4.0	"	" "
79843	"	T. D. Southworth	"	12.8	9.3	3.5	"	" "

Digitized by Google

Milk—Below Standard—(Continued)

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
79844	1-25-10	Geo. Boyce	Poultney	13.2	9.4	3.8	Dirty	No typhoid bacilli found.
79845	"	Harry Mashak	"	12.7	9.3	3.4	"	" "
79846	"	Chas. Stenter	"	13.1	8.8	4.3	"	" "
79847	"	Ed. Marcey	"	12.7	9.0	3.7	"	" "
79848	"	Pat McMorrow	"	13.1	9.0	4.1	"	" "
80013	3-18-10	L. L. Harris	Stowe	15.1	9.7	5.4	"	Excellent chemically but contains much sediment.
80164	3-22-10	C. A. Fisk	Roxbury	15.6	9.8	5.8	"	" " " " " "
80184	3-23-10	C. J. Munn	Johnson	14.4	9.1	5.3	"	" " " " " "
80259	3-24-10	E. C. Bryant	Manchester	12.8	8.8	4.0	"	
80260	"	A. Waters	"	12.1	8.6	3.5	"	
80261	"	W. H. Benedict	"	12.2	8.6	3.6	"	
80606	3-25-10	H. E. Smith	Northfield	13.5	9.5	4.0	"	F. P. Houston, producer.
80607	"	"	"	13.6	9.3	4.3	"	H. M. Dole, "
80608	"	"	"	12.9	9.2	3.7	"	W. J. Plastridge, "
80609	"	"	"	12.6	9.0	3.6	"	" "
80610	"	"	"	13.9	9.5	4.4	"	J. C. Rice, "
80612	"	J. C. Hedges	"	12.6	9.1	3.5	"	Chas. Dole, "
80613	"	Alex England	"	14.2	9.4	4.8	"	
80614	"	F. A. Joslyn	"	13.9	9.3	4.6	"	
80615	"	M. J. Clough	"	13.8	9.6	4.2	"	Very dirty specimen.
80616	"	J. C. Hedges	"	12.8	9.1	3.7	"	
80617	"	R. S. Ellis	"	11.8	9.1	2.7	"	Low in fat—skimmed.
80621	"	W. M. Irish	Brattleboro	13.0	9.1	3.9	"	Coombs, producer.
80573	3-28-10	A. Jaquith	"	13.1	8.9	4.2	"	
80574	"	M. Dalrymple	"	13.0	9.1	3.9	"	
80577	"	C. L. Stacey	"	14.8	9.3	5.5	Very dirty	
80579	3-29-10	J. B. Dawson	Wallingford	13.2	9.2	4.0	Dirty	
80580	"	N. E. Davis	"	14.0	9.3	4.7	"	
80608	3-31-10	R. E. Atwood	Brandon	10.6	9.4	1.2	Normal	Skimmed.
80609	"	"	"	10.57	9.57	1.2	Sour	"

Total, 105

Digitized by Google

Milk—Standard or Above

Specimens Examined at Laboratory of Hygiene During First Quarter, 1910

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
76740	1- 3-10	William Rogers	Wallingford	16.1	10.1	6.0	Normal	
76741	"	" "	"	16.5	10.4	6.1	"	
77729	1-18-10	C. A. Wright	Waterbury	13.1	9.2	3.9	"	
77731	"	L. Russell	"	13.6	9.3	4.3	"	
77732	"	J. E. Pixley	"	12.8	8.9	3.9	"	
77733	"	F. W. Powers	"	13.6	9.2	4.4	"	
77734	"	A. J. Torrey	"	14.0	9.4	4.6	"	
77735	"	B. O. Woodward	"	12.7	8.9	3.8	"	
77737	"	L. M. Graves	"	13.3	9.4	3.9	"	
77739	"	J. E. Greene	"	13.9	9.7	4.2	"	
77740	"	L. S. Towne	"	13.0	9.4	3.6	"	
77744	"	H. E. Hazeltine	"	14.6	9.8	4.8	"	
77745	"	F. F. Fuller	"	12.5	9.1	3.4	"	
77747	"	B. S. Morey	"	13.5	9.5	4.0	"	
77748	"	F. W. Morey	"	13.0	9.2	3.8	"	
77749	"	S. Baird	"	13.2	9.6	3.6	"	
77750	"	S. M. Stearns	"	14.7	9.7	5.0	"	
77751	"	G. V. Crossett	"	13.6	9.4	4.2	"	
77754	"	J. S. Sweet	"	14.8	9.3	5.5	"	
78502	1-20-10	R. C. Meade estate	Proctor	Cream		22.0		
77755	1-18-10	Fred Wilson	West Derby	12.7	9.3	3.4	Normal	
77758	"	Mrs. J. N. Langeway	"	14.9	9.3	5.6	"	
78113	1-25-10	A. G. Rice	Bellows Falls	13.3	9.4	3.8	"	William Wilson, producer.
78114	"	"	" "	13.7	8.5	4.2	"	Pebody & Kendall, producers.
78115	"	"	" "	13.9	9.7	4.2	"	Chas. Jeffs, producer.
78116	"	"	" "	13.6	9.3	4.3	"	Spencer, "
78124	"	G. W. Peck	" "	14.9	9.8	5.1	"	Chas. Wood, "
78125	"	"	" "	13.7	9.4	4.3	"	Fisher, "
78131	"	C. B. Hume	" "	13.9	9.3	4.6	"	Welch, "
78132	"	Hawley & Torrey	" "	12.5	8.9	3.6	"	Lewis, "
78134	"	" "	" "	12.5	8.7	3.8	"	W. S. Fenn, "
78135	"	O. L. Young	" "	12.0	8.6	3.4	"	E. S. Weeden, "
78136	"	"	" "	12.5	8.7	3.8	"	F.W. Weeden, "
78293	1-27-10	N. N. Harris	Montpelier	13.2	9.0	4.2	"	
78294	"	D. F. Sallies	"	13.7	9.3	4.4	"	
78295	"	F. H. Gown	"	13.9	8.9	5.0	"	
78296	"	Bingham Marvin	"	14.1	9.4	4.7	"	
78297	"	A. E. Niles	"	13.7	9.4	4.3	"	H. S. Tabor, "

Digitized by Google

MILK—STANDARD OR ABOVE—(Continued)

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
78298	1-27-10	Geo. Caustic & Son	Montpelier	12.6	8.9	3.7	Normal	
78299	"	Harrison Lombard	"	13.9	9.3	4.6	"	
78300	"	Geo. Lawrence	"	13.0	9.2	3.8	"	
78301	"	Crescent Creamery	"	13.9	9.5	4.4	"	Tom Conlin, producer.
78302	"	Luman Cutler	"	14.5	9.5	5.0	"	
78303	"	F. R. Hayden	"	13.8	9.4	4.4	"	
78304	"	A. C. Niles	"	13.5	9.5	4.0	"	L. W. Bailey, "
78343	1-28-10	R. Reynolds	Bellows Falls	13.1	8.9	4.2	"	
78344	"	F. C. Rand	"	14.3	9.8	4.5	"	F. C. Raney, "
78345	"	Baker	"	14.9	10.1	4.8	"	
78346	"	H. S. Wright	"	12.5	9.1	3.4	"	W. Davidson, "
78347	"	"	"	13.4	9.4	4.0	"	W. Smith, "
78348	"	"	"	13.1	9.6	3.5	"	
78349	"	"	"	13.2	9.4	3.8	"	
78350	"	J. H. Wright, Jr.	"	13.1	9.3	3.8	"	
78351	"	W. B. Daw & Son	"	13.9	9.2	4.7	"	
78353	"	G. W. Peck	"	12.8	9.1	3.7	"	
78492	1-29-10	"	"	13.2	9.3	3.9	"	
78493	1-31-10	Hawley & Torrey		15.1	9.7	5.4	"	J. Leach, producer.
78494	"	" "		14.3	9.7	4.6	"	Ray Metcalf, "
78495	"	A. Whitter	"	16.5	6.9	9.6	"	Unmixed—Top Sample.
78496	"	"	"	17.0	9.2	7.8	"	" "
78497	"	P. Gammell	"	13.1	9.3	3.8	"	
78498	"	H. Westcott	"	13.7	9.3	4.4	"	
78626	2- 3-10	Montpelier Creamery		14.2	9.8	4.4	"	F. E. Grout, producer.
78627	2- 4-10	" "		14.2	9.6	4.6	"	Jas. Pembrooke, "
78628	"	" "		(16.2)	(9.1)	7.1	"	Willis Hill, " Top sample—Unmixed.
78629	"	Geo. Campbell	Montpelier	12.9	8.9	4.0	"	
78613	"	T. B. Calkins	Burlington	12.7	9.1	3.6	"	
78614	"	"	"	Cream		34.0	"	
78615	"	Steele & Butler	"	13.7	9.5	4.2	"	
78616	"	" "	"	Cream		40.0	"	
78706	2- 7-10	H. Garbow	"	13.5	9.5	4.0	"	
78632	2- 4-10	W. G. Ober	Westminster	13.8	9.2	4.6	"	
78633	"	S. L. Daggett	"	(16.8)	(9.7)	7.1	"	Top sample—Unmixed.
78634	"	E. R. Franklin	"	13.1	9.2	3.9	"	
78774	2- 8-10	W. H. Benedict	Manchester	13.3	9.2	4.1	"	
78775	"	J. M. Bowen	"	13.5	9.5	4.0	"	
78776	"	A. F. Smith	"	13.7	9.1	4.6	"	
78777	"	E. A. Wilcox	"	12.8	8.9	3.9	"	

Digitized by Google

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
78776	2- 8-10	R. D. Brown	Manchester	14.7	9.7	5.0	Normal	
78779	"	R. H. Purdy	"	14.4	9.4	5.0	"	
78780	"	Chas. R. Ames	"	14.0	8.9	5.1	"	
77967	1-24-10	H. B. Chittenden	Burlington	13.1	9.2	3.9	"	
77968	"	"	"	Cream		31.0	"	
77969	"	W. Brown	"	12.9	9.2	3.7	"	
77966	"	H. B. Chittenden	"	13.3	9.4	3.9	"	"Baby"
77971	"	F. L. Murray	"	13.3	9.3	3.9	"	H. H. Ray, producer.
77972	"	"	"	Cream		28.0	"	
77973	"	P. Bushey	"	13.0	9.0	4.0	"	
77977	"	T. Chastenay	"	12.6	8.9	3.7	"	F. B. Calkins, "
77978	"	J. O'Brien	"	12.8	9.0	3.8	"	H. H. Wheeler, "
77979	"	Wm. Suckstorff	"	14.1	9.5	4.6	"	Tilly, "
77980	"	"	"	13.7	9.3	4.4	"	Hutchins, "
77981	"	"	"	13.9	9.3	4.6	"	Hall, "
77982	"	J. G. G. Downing	"	13.2	9.2	4.0	"	Catlin, "
77983	"	"	"	Cream		45.0	"	Excellent quality.
77984	"	J. B. Ritchie	"	12.6	9.0	3.6	"	Stewart, producer.
77985	"	D. E. Wright	"	13.8	9.4	4.4	"	Mrs. Arthur, "
77986	"	Geo. Salger	"	13.1	9.3	3.8	"	McCrae, "
77987	"	E. J. Viens	"	13.3	9.3	4.0	"	H. H. Wheeler, "
77988	"	" No. 2	"	13.3	9.1	4.2	"	" "
77989	"	Rockwell	"	13.0	9.6	3.4	"	
77991	"	I. E. Chase	"	12.5	8.9	3.6	"	Lamson & Millham, producers.
77992	"	"	"	13.3	9.0	4.3	"	
77993	"	"	"	Cream		24.0	"	
78922	2-14-10	Steele & Butler	"	13.1	8.9	4.2	"	
78923	"	H. H. Ray	"	12.0	8.6	3.4	"	
78924	"	L. E. Haynes	"	12.7	8.9	3.8	"	
78925	"	F. B. Calkins	"	12.3	8.8	3.5	"	
78927	"	H. S. Morgan	"	13.5	9.1	3.4	"	
78929	"	J. J. Childs	"	12.6	9.35	3.25	"	Barely passable.
78930	"	J. B. Ritchie	"	12.2	8.95	3.25	"	" "
78931	"	"	"	13.4	9.0	3.4	"	Stewart, producer.
78932	"	E. L. Bordo	"	12.4	8.8	3.6	"	Hill, "
78934	"	P. Bushey	"	13.3	9.3	4.0	"	Lacasse, "
78935	"	Bostwick Bros.	"	13.7	9.3	4.4	"	Thomas, "
78936	"	E. L. Bordo	"	Cream		46.0	"	
78937	"	L. E. Haynes	"	Cream		44.0	"	
78938	"	H. H. Ray	"	Cream		41.0	"	Webster, "

Digitized by Google

MILK—STANDARD OR ABOVE—(Continued)

Laboratory Number	Date	Dealer	Town	Total Solids	Solids Not Fat	Fat	Physically	Remarks
78973	2-16-10	C. C. Bliss	Burlington	12.9	8.9	4.0	Normal	
78974	"	"	"	Cream		44.0	"	
78979	"	L. Kiesley	"			6.7	"	Top sample.
78983	"	D. J. Millham	"	12.5	8.7	3.8	"	
78984	"	"	"	Cream		48.0	"	
79081	2-17-10	H. A. Bixby & Co.	"	13.1	9.1	4.0	"	
79082	"	"	"	Cream		54.0	"	Excellent quality.
79313	2- 4-10	Geo Leonard	Poultney	13.0	9.6	3.4	"	No typhoid bacilli found
79337		Wygant & Fenton	"	13.6	9.3	4.3	"	" " " "
79743	3-11-10	Harry Thomas	Hardwick	14.2	9.4	4.8	"	
79796	3-14-10	Jos. Henry	Proctor	12.7	8.9	3.8	"	
79797	"	C. Ladabouche	"	13.9	9.3	4.6	"	
79798	"	R. C. Mead Est.	"	12.9	8.9	4.0	"	
79799	"	W. Sharp	"	13.2	9.0	4.2	"	
80011	3-18-10	D. E. Scribner	Stowe	12.8	8.9	3.9	"	
80013	"	A. C. Oakes	"	14.4	9.8	4.6	"	
80014	"	J. C. Morgan	"	14.8	9.7	5.1	"	
80090	3-21-10	Chafee Farm	Rutland	12.6	9.0	3.6	"	
80091	"	"	"	12.7	9.1	3.6	"	
80165	3-22-10	G. A. Roy	Roxbury	13.7	8.8	4.9	"	
80181	"	E. E. Holmes	Johnson	14.2	9.4	4.8	"	
80182	"	J. D. Odell	"	14.4	9.2	5.2	"	
80183	"	M. S. Hill	"	13.7	8.9	4.8	"	
80185	"	J. Barlow	"	12.7	8.7	4.0	"	
80311	3-25-10	Alex England	Northfield	14.8	9.5	5.3	"	
80322	"	A. Robbins	Brattleboro	13.9	9.3	4.6	"	
80323	"	A. E. Torrey	"	12.5	8.5	4.0	"	
80324	"	A. T. Kirkwood	"	13.2	9.0	4.2	"	
80325	"	W. M. Irish	"	13.4	9.0	4.4	"	A. C Eldredge, producer.
80326	"	M. R. Robbins & Son	"	13.7	9.3	4.4	"	
80327	"	Dunklee & Randall	"	13.4	8.8	4.6	"	
80328	"	H. H. Winchester	"	13.0	9.1	3.9	"	
80344	3-26-10	H. M. Barrett	"	14.4	9.6	4.8	"	
80345	"	L. A. Howard	"	13.0	9.1	3.9	"	
80346	"	C. A. Barber	"	14.0	9.1	4.9	"	
80347	"	G. A. Collins	"	14.2	9.6	4.6	"	
80348	"	C. C. Winchester	"	13.8	9.6	4.2	"	
80375	3-28-10	R. H. Briggs	"	14.3	9.6	4.7	"	
80376	"	A. T. Kirkwood	"	12.5	8.9	3.6	"	Smith, producer.
80378	3-29-10	W. K. Merriams	Wallingford	13.0	9.0	4.0	"	
80381	"	L. L. Harris	Stowe	14.3	9.5	4.8	"	
80349	3-26-10	E. E. Mather	Brattleboro	13.3	9.2	4.1	"	

Total, 160

Digitized by Google

SPECIMENS EXAMINED AT THE LABORATORY OF HYGIENE DURING FIRST QUARTER, 1910

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
76642	2- 5-10	Pork, No. 1 and 2	F. H. Palmer, Bristol, Vt.		..	..	..	No parasites present.
76643	"	Ham	" "		..	..	..	Pyogenic abscess.
76756	1 -5 10	Perfection Baking Powder	Submitted by F. E. Perkins, Burlington	Dudley & Co., Fairport, N. Y	1	..	..	An alum phosphate powder.
76840	1 -7-10	Milk	Submitted by Mrs. Chas. T. Clarke, Bellows Falls		1	..	..	
77089	1-10-10	Hansen's Danish Butter Color	Submitted by Chas. Hansen's Laboratory, Little Falls, N. Y		1	..	..	
78485	1-28-10	Milk	Submitted by C. L. Greene, Burlington	H. H. Ray, Burlington	1	..	..	
78053	1-25-10	"	" Cap. C. T. Boyd, Ft. Ethan Allen		1	..	..	
78941	1-31-10	"	" H. L. Stillson, Bennington		*	..	..	Analysis for modification.
77948	1-19-10	Cereal	" G. R. Sanborn, M. D., New Haven		*	..	..	For nature of foreign material.
78208	1-26-10	Milk	" Franklin County Creamery, St Albans		..	1	..	Watered and skimmed.
78208	"	"	Submitted by Franklin County Creamery, St Albans		..	1	..	Watered and skimmed.
78204	1-27-10	Butter	John Shelvey, Rutland		1	..	..	Submitted by J. C. Jones.
78205	"	"	T. Mangan, "		..	1	..	Oleomargarine.
78206	"	"	A. D. Tossing, "		..	1	..	"
78205	"	Oleomargarine	T. Mangan, "		1	..	..	
78206	"	Butter	" "		..	1	..	Oleomargarine.
78207	"	Oleomargarine	A. D. Tossing "		1	..	..	
78340	1-18-10	Marquis Olive Oil	F. A. Leland, Chester	Polk & Calder Drug Co., Troy, N. Y.	1	..	..	No adulteration detected.
78341	"	Martine " "	" "	M. L. Hall Co., Boston	1	..	..	" " "
78396	1-29-10	Milk	Submitted by Franklin County Creamery, St. Albans		..	1	..	Dirty, but no added water.
78397	"	"	Submitted by Franklin County Creamery, St. Albans		..	1	..	" " " "
78398	"	"	Submitted by Franklin County Creamery, St. Albans		..	1	..	" " " "
78399	"	"	Submitted by Franklin County Creamery, St. Albans		..	1	..	" " " "
78400	"	"	Submitted by Franklin County Creamery, St. Albans		..	1	..	" " " "
78401	"	"	Submitted by Franklin County Creamery, St. Albans		..	1	..	" " " "

Digitized by Google

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
78402	1-29-10	Cream	Submitted by W. J. Faland, Bethel		1			
78707	2- 7-10	Frankfurters	W. L. O'Clair, Burlington	— — Germain, Burlington		1		Artificial color and excess starchy material.
78708	"	Bologna	M. E. Sullivan, "	— — Francis, "	1			Passed
78709	"	Frankfurters	C. R. Bacon, "	— — Fletcher, Essex Junction		1		Artificial color and excess starchy material.
78710	"	"Bismarck Brown"	Theo. Chalmer, "		*			Illegal for use in coloring food.
78711	"	Link Sausage	C. R. Bacon, "	— — McKenzie, Burlington	1			Passed.
78712	"	Bag Sausage	" "	C. R. Bacon, "	1			"
78713	"	Frankfurters	M. E. Sullivan, "	— — Francis, "		1		Artificial color and excess starchy material.
78716	"	"	L. A. Chase, "	Swift & Co., Chicago	1			Passed.
78717	"	"	E. J. Thomas, "			1		Artificial color and excess starchy material
78905	2-12-10	Oleomargarine	F. L. Murray, "		1			Correctly stamped.
78906	"	Butter	Bourne Creamery Co., Burlington		1			No adulteration detected.
78907	"	"	E. J. Viens "			1		Unlabeled oleomargarine.
78908	"	"	F. X. Saltus, "			1		" "
78909	"	"	Geo. Saiger, "			1		" "
78775	"	"	Submitted by John Stewart, Burlington		1			No adulteration detected.
78112	1-25-10	Gluten Flour (Cresco)	" V. A. Grant, Randolph	Farwell & Rhines, Watertown, N. Y.			1	Not a gluten flour. Starch, 74 per cent.
79288	2-25-10	Milk	" A. S. Hill, South Burlington		1			
79289	"	"	" " " "			1		Contains much dirt.
79290	"	"	" " " "			1		" " "
79291	"	"	" " " "			1		" " "
79200	2-22-10	Dried Milk	" Smith & Son, White River Junc.		1			
79412	2-28-10	Gluten Flour	" Dr. C. S. Caverly, Rutland	Farwell & Rhines, Watertown, N. Y.			1	Total carbohydrates, 40.7 per cent.
79571	3 -7-10	Milk	" N. A. Hassam, Gaysville		1			Formaldehyde absent.
79572	"	"	" " "		1			" "
77775	1-21-10	Maple Syrup	" C. J. Read, East Fairfield		1			No adulteration detected.
77776	"	"	" " " "		1			" " "
77777	"	"	" " " "		1			" " "
79682	3- 9-10	Gluten Flour	" H. J. Dane, Northfield		1			
77794	1-19-10	Olive Oil	Evans & Bryan, Waterbury		1			No adulteration detected.
77795	"	"	" " "	A. Spiehler, Rochester, N. Y.	1			" " "

Digitized by Google

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
77796	1-19-10	"Lunch" Sardines	F. Soldini, Waterbury	Angelo Parodi, Genoa, Italy.	1			8 fish, excellent quality, in olive oil.
77797	"	Torrone	" "	"Italy"	1			
77798	"	Sport Sardines	" "	A. Parodi, Genoa, Italy	1			8 fish, excellent quality, in olive oil.
77799	"	Tunny Fish	" "	" " "	1			Excellent quality, in olive oil.
77800	"	Antipasto—'Pole Star'	" "	F. Giraud, Italy	1			Ingredients of excellent quality.
77801	"	Figs—bulk	" "		1			Practically free from insects.
77802	"	Olive Oil—Star Brand	" "	A. Escoffier Figlio, San Remo, Italy	1			No adulteration detected.
77826	"	Cocoa	" "	W. H. Baker, Winchester, Va	1			No adulteration detected. Full weight.
77803	"	Sugar Vinegar	W. M. Greene, "	Holbrook Groc'y Co., Keene, N. H.	1			Conforms to standard for sugar vinegar.
77804	"	L. & H. Lemon Flavor	" "	Lee & Herrick, Saratoga Springs, N. Y.	1			Not misbranded, but rather inferior article.
77805	"	L. & H. Orange Flavor	" "	Lee & Herrick, Saratoga Springs, N. Y.	1			Not misbranded, but rather inferior article.
77806	"	L. & H. Strawberry Flavor	" "	Lee & Herrick, Saratoga Springs, N Y.	1			Not misbranded, but rather inferior article.
77807	"	L. & H. Pineapple Flavor	" "	Lee & Herrick, Saratoga Springs, N. Y.	1			Not misbranded, but rather inferior article.
77808	"	Haugesuud Sardines	" "	Haugesund Canning Co., Norway	1			21 small fish in olive oil. Excellent quality.
77809	"	O K Vanilla Substitute	" "	C. L. Colton Co., Earlville, N. Y.	1			Correctly labeled.
77810	"	O K Compound Lemon	" "	C. L. Colton Co., Earlville, N. Y.	1			" "
77811	"	Murdock's Corn Starch	" "	Oswego Maize Products Co., Oswego, N. Y.	1			No adulteration detected.
77820	"	Daisy " "	" "	Holbrook Groc'y Co., Keene, N. H.	1			" " "
77821	"	Cream " "	" "	A. E. Staley Mfg. Co., Baltimore, Md.	1			" " "

Digitized by Google

Foods (Continued)

Laboratory Number	Date	Article.	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks.
77822	1-19-10	Dundee Brand Evaporated Milk	W. M. Greene, Waterbury	Oatman C. M. Co., Dundee, Ill.	1			Good quality.
77823	"	Cinnamon	" "	A. Colburn Co., Philadelphia	1			Full weight.
77824	"	Red Pepper	" "	" "	1			" "
77825	"	Ginger	" "	" "	1			" "
77827	"	Larsen Sardines	Waterbury Fruit Co., Waterbury	"Norway"	1			Excellent quality fish in olive oil.
77828	"	Sardines in Olive Oil	" " "	"A. J. Martel"	1			16 excellent quality fish in olive oil.
77829	"	Lemon Extract	O'Neill Bros., "	E. Hartshorn & Sons, Boston	1			Lemon oil 6.5 per cent.
77830	"	Vanilla "	" "	" " "	1			No adulteration detected.
77831	"	Sea Lion Sardines	" "	Sea Coast Can Co., Eastport, Me.	1			6 fish in cottonseed oil. Fair quality.
77865	"	Game Cock Sardines	F. C. Lamb, "	Sea Coast Can. Co., Eastport, Me.	1			8 passable fish in cottonseed oil.
77866	"	Compound Jelly—Crab Apple	" "	Emery Food Co., Chicago	1			Correctly labeled.
77867	"	" " —Currant	" "	" " " "	1			" "
77868	"	" " —Plum	" "	" " " "	1			" "
77869	"	Figs—bulk	" "		1			Practically free from insects.
77870	"	Unicorn Sardines	" "		1			12 fish, passable quality and poor appearance, in cottonseed oil.
77871	"	Smoked Sardines in Oil	" "	Swedish Preserving Union	1			21 good quality fish in olive oil
77872	"	Hatchet Brand Sardines	" "	Twitchell Champlin Co., Boston	1			18 medium sized fish. Excellent quality.
77873	"	Marianic Sardines	" "	"Portugal"	1			10 good quality fish in olive oil.
77874	"	Teisser Brand Sardines	" "	Wm. Underwood Co., Boston	1			14 fish of excellent appearance, in cottonseed oil.
77875	"	Olive Oil	" "	H. J. Heinz Co, Pittsburg, Pa.	1			No adulteration detected.
77876	"	Cocoa	" "	Hooton Chocolate Co., Newark	1			No adulteration detected. Full weight.
77877	"	Bromangelon—Lemon	" "	Stern & Saalburg Co., N. Y.	1			
77878	"	Premier Orange Marmalade	" "	F. H. Leggett Co., N. Y.	1			No adulteration detected.
77879	"	Tudor Tea	" "	A. H. Bell & Co., Boston	1			" " "
77880	"	Lemon Extract	" "	Stickney & Poor, Boston	1			Lemon oil 6.2 per cent.
77881	"	" "	" "	Kimball Bros. Co., Enosburg Falls, Vt.	1			Lemon oil 6.8 per cent.
78868	2 11 10	Cereal	Submitted by Dr. G. R. Sanborn, New Haven.		*			

Digitized by Google

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
78799	2- 9-10	Gold Star Cream Tartar	F. E. Cormia, Milton	Berry Hall Co., Burlington	1			
78800	"	Cream Corn Starch	" "	Staley Mfg. Co., Baltimore	1			
78801	"	Sunbeam Lemon Extract	" "	Austin Nichols Co., N. Y.	1			Lemon oil 5.7 per cent.
78802	"	Republic Vanilla	" "	" " " "	1			
78803	"	Martel Sardines	" "		1			15 medium sized fish in olive oil. Excellent quality.
78804	"	Des Madones Sardines	" "	"Product of Portugal"	1			8 medium sized fish in olive oil. Good quality.
78805	"	Busy Bee Extracted Honey	" "	Austin Nichols Co., N. Y.	1			Natural.
78806	"	Purity Peanut Butter	" "	Henry Heide, N. Y.	1			
80582	3-30-10	Milk	Submitted by H. H. Ray, Burlington		*			
80066	3-21-10	"	" " Truman Lawrence, St. Albans		*			
78940	2-14-10	Stat Brand Sardines	J. L Kelley, Burlington	Stavanger, Norway	1			28 small fish in olive oil. Good quality.
78941	"	Lemon Extract	" "	Kimball Bros, Enosb'g Falls			1	Lemon stated, 3.50 per cent; present, 1.25 per cent.
78944	"	Artificial Currant Jelly	" "	Atlas Pres. Co., Baltimore	1			An imitation, correctly labeled.
78949	"	Corn Starch	Direct Importing Co., Burlington		1			
78959	"	Artificial Strawberry Extract	" " " "		1			Correctly labeled. Full measure.
78960	"	Orange Extract	" " " "		1			Orange oil 5 per cent. Full measure.
78961	"	Lemon "	" " " "		1			Lemon oil 5 per cent. " "
78962	"	Artificial Raspberry Extract	" " " "		1			Correctly labeled. " "
78963	"	Essence Wintergreen	" " " "		1			Full measure.
79872	2-25-10	Crossed Fish Brand Sardines	O G. Phelps & Co., Milton	Stavanger Pres Co., Stavanger, Norway	1			27 small fish in olive oil. Excellent quality.
79874	"	Smith's Evaporated Apples	" " "	J. J. Smith, Newark, N. J.	1			Free from insects. Sulphur stated.
79884	2-26-10	Cream Salad Oil—Comp	E. A. Frost, "		1			A cottonseed oil comp. Illegal if sold as olive oil.
79886	2-25-10	Gold Milk—Evaporated	Submitted by W. J. Thayer, Enosburg Falls	Hire's Cond. Milk Co., Philadelphia	1			
79887	"	St. Elmo Condensed Milk	" " "	Hire's Cond. Milk Co., Philadelphia	1			
79888	"	Queen " "	" " "	Hire's Cond. Milk Co., Philadelphia	1			•
79889	"	Silver Brand " "	" " "	Hire's Cond. Milk Co., Philadelphia	1			
79890	"	Hire's " "	" " "	Hire's Cond. Milk Co., Philadelphia	1			•

Digitized by Google

Foods (Continued)

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
79391	2-25-10	Blue Ribbon Condensed Milk	Submitted by W. J. Thayer, Enosburg Falls	Hire's Cond. Milk Co., Philadelphia	1			
79516	3- 4-10	Vera Sardines	Coöperative Grocery, Richford	"Stavanger, Norway"	1			28 small fish in olive oil. Excellent quality.
79517	"	Saratoga Pineapple Extract.	" " "				1	A colored imitation.
79518	"	Extract Honey	" " "	J. E. Crane & Son, Middlebury	1			Natural.
79521	"	Hartshorn's Lemon Extract.	" " "	Hartshorn & Son, Boston	1			Lemon oil 5.5 per cent.
79522	"	Gold Evaporated Milk	" " "	Hire's C. M. Co., Philadelphia	1			
79524	"	Tri Cod Fish Cake	H. J. Smith, Richford	Chas. F. Wonson Co., Gloucester, Mass.	1			Label correct. Gross weight 12¼ oz.
79525	"	Allspice	" "	M. L. Hall Co., Boston	1			
79527	"	Golden Rod Baking Powder.	" "	Canby, Ach & Canby, Akron, Ohio			1	Names of ingredients not on label.
79528	"	Green Mountain Lemon Ext.	" "	Kimball Bros., Enosb'g Falls			1	Lemon oil stated, 8½ per cent; present, 1.25 per cent.
79529	"	Green Mountain Peppermint Extract	" "	" " " "	1			Conforms to label.
79579	3- 5-10	Lemon Extract	D. M Janes, "		1			Lemon oil 5 per cent.
79580	"	Cream Salad Oil—Comp	" "	Burl. Drug Co., Burlington	1			A cottonseed oil preparation. Illegal if sold as olive oil.
79695	3-10-10	Special Dietetic Flour	Submitted by H. J. Dane, Northfield	Farwell & Rhines Co., Watertown, N. Y.	*			Total carbohydrates 62.04 per cent.
80274	3-23-10	Akoll Biscuit	" " "	S. S. Pierce & Co., Boston	1			" " 3.47 per cent.
80286	3-18-10	Butter	" Mrs. E. E. Perry		1			
80102	3-22-10	Lard	" Geo. H. Cross, St. Johnsbury		1			
80289	3-24-10	Beefolio	" " "		*			
78942	2-14-10	Ruby Brand Condensed Milk	J. L. Kelley, Burlington	Vt. Cond. Milk Co., Richmond	1			
78945	"	Olive Oil	Direct Importing Co., Burlington		1			
78946	"	Salad Oil	" " " "		1			Composed of cottonseed oil.
78947	"	Lunch Cocoa	" " " "		1			
78948	"	Breakfast Cocoa	" " " "		1			
78950	"	Direct Coffee	" " " "		1			
78951	"	White Pepper	" " " "		1			
78952	"	Allspice	" " " "		1			
78953	"	Benefit Baking Powder	" " " "		1			[12.02 per cent. Alum phosphate. Available CO_2
78954	"	Direct Tea—Japan	" " " "		1			
78955	"	" " —Eng. Breakfast	" " " "		1			

Digitized by Google

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
78956	2-14-10	Direct Assam Blend	Direct Importing Co., Burlington		1			
78957	"	Coffee No. 10	" " " "		1			A low grade.
79373	2-25-10	Delviso Olive Oil	O. G. Phelps & Co., Milton	Falcon Packing Co., N. Y.	1			
79376	"	Altro Baking Powder	" "	Albany Baking Powder Co., Albany, N. Y.	1			An alum phosphate powder.
79377	"	Van Camp's Condensed Milk	" "	Van Camp Packing Co., Indianapolis	1			
79378	"	Hall Brand Peppermint	" "	Schlotterbeck & Foss, Portland, Me	1			Below standard but labeled to indicate contents.
79379	"	" " " Lemon	" "	Schlotterbeck & Foss, Portland, Me.	1			Below standard but labeled to indicate contents.
79581	2-26-10	Lemon Extract	E. A. Frost, "	E. A. Frost		1		Less than 1 per cent. lemon oil.
79520	3- 4-10	Frostlene	Cooperative Grocery, Richford		1			
79526	"	Altro Baking Powder	H. J. Smith, "	Albany Baking Powder Co., Albany, N. Y.	1			
79530	"	Apple Jelly	" "	T. Middleby, Jr., Boston	1			A compound correctly labeled
79532	"	Champion Sardines	" "	"Lubec, Me.	1			6 fish in cottonseed oil as labeled.
79533	"	Sardines in Oil	" "	St. Croix Co., Robbinston, Me	1			8 fish, fair quality, in cottonseed oil.
79913	3-17-10	Dundee Evaporated Milk	J. B. Provost, St. Johnsbury	Oatman Condensed Milk Co., Dundee, Ill.	1			Conforms to Vermont standard.
79914	"	Red Bell Japan Tea	" "		1			
79916	"	Rajah Condensed Cod	" "	C. F. Wonson Co., Gloucester, Mass.	1			Good quality.
79912	"	Manx Condensed Milk	" "	Wayne Co. Condensed Milk Co., Ontario, N. Y.	*			Contents spoiled.
79917	"	Good Value Vanilla	" "		1			
79918	"	Anchor Brand Sardines	" "	Seacoast Canning Co., Eastport, Me.	1			6 large fish in cottonseed oil.
79924	"	Lemon Extract	F. G. Landrey, "		1			Lemon oil 5 per cent.
79925	"	Frostlene	H. F. Estabrook, "	Frostlene Laboratories, Boston	1			
79926	"	Royal Pimento	" "	Dwinell Wright Co., Boston	1			
79927	"	Baking Soda	" "		1			
79928	"	Strictly Pure Strawberry Extract	" "	Weeks & Potter, Boston			1	A colored imitation.

Digitized by Google

Foods (Continued)

Laboratory Number	Date	Article	Obtained From	Wholesaler or Manufacturer	Legal	Adulterated	Misbranded	Remarks
79929	3-17-10	Strictly Pure Lemon Extract	H. F. Estabrook, St. Johnsbury	Weeks & Potter, Boston	..	..	1	Artificial color not stated.
79930	"	Sunshine Baking Powder	Buckley & Williams, "		1	..	..	
79931	"	Lemon Extract	" " "	Kimball Bros., Enosburg Falls	1	..	..	Lemon oil 7 per cent.
79932	"	Cherries in Creme de Menthe	" " "	Mihalovitch Fletcher Co., Cincinnati	..	..	1	Coal tar color not stated.
79933	"	Lemon Extract	" " "	Van Duzer Extract Co., N. Y.	1	..	..	Lemon oil 9.3 per cent. Excellent quality.
79934	"	Good Value Wintergreen	" " "		1	..	..	
79935	"	Imitation Vanilla Flavor	" " "	St John & Co., New York	1	..	..	Label in correct form.
79936	"	Sardines in Olive Oil	" " "	Phillipe & Canaud, France	1	..	..	Excellent quality fish in olive oil.
80214	3-24-10	Preserved Strawberries	H. C. Libby, Hardwick	M. L. Hall Co., Boston	1	..	..	
80215	"	McAndrews Lemon Extract	" "	Dolan & Furnival Co., Portland, Me.	1	..	..	Lemon oil 6 per cent
80216	"	" Imitation Vanilla	" "	Dolan & Furnival Co., Portland, Me.	1	..	..	Label in correct form.
80217	"	Harris Lemon Extract	" "	F. E. Harris, Binghamton, N. Y.	1	..	..	Lemon oil 7.7 per cent.
80218	"	Daisy Corn Starch	" "	Holbrook Grocery Co., Keene, N. H.	1	..	..	
80219	"	Nord Star Sardines	" "	"Stavanger, Norway"	1	..	..	34 small fish in olive oil. Excellent quality.
80220	"	Tomato Sauce	G. B. Constantino, "	"Palmero, Italy"	1	..	..	
80221	"	Antipasto	" "	Carlo Gheslanzoni, Italy	1	..	..	
80222	"	Tunny Fish in Olive Oil	" "	Castello & Co., Genoa, "	1	..	..	Solid fish in olive oil. Excellent quality.
80223	"	Liberty Statue Sardines	" "		1	..	..	Small fish in olive oil. Excellent quality.
80224	"	Marie Elizabeth "	" "	"Portimao, Portugal"	1	..	..	Medium sized fish in olive oil.
80225	"	Game Cock "	" "	Seacoast Can. Co., Eastport, Me.	1	..	..	" " " " cottonseed oil.
80226	"	Lard	" "		1	..	..	
79101	"	Butter	Submitted by B. H Alden, Burlington		..	1	..	Oleomargarine.

Legal	162
Illegal	33
*Unclassified, for examination other than as to legality	9
Total	204

Digitized by Google

SPECIMENS EXAMINED AT LABORATORY OF HYGIENE DURING FIRST QUARTER, 1910

Laboratory Number	Date	Article	Obtained from	Manufacturer or Wholesaler	Legal	Adulterated	Misbranded	Remarks
78869	2-11-10	Kresslin Special Tablets	Submitted by Mrs. J. Brenson E. Hardwick	Dr. J. Spillinger, New York City	1	..	..	Not misbranded.
78894	2- 4-10	Strychnine Tablets $\frac{1}{30}$ gr.	" Dr. W. S. Pomeroy, Danby.		1	..	..	Full weight.
78895	"	Codeine Tablets $\frac{1}{4}$ gr.	" " "		..	1	..	Under weight.
77789	1-19-10	Spirits Camphor	Evans & Bryan, Waterbury		..	1	..	57.9 per cent. U. S. P. strength.
77790	"	"	Submitted by Evans & Bryan, Waterbury		1	..	..	Conforms to U. S. P.
79385	2-26-10	"	E. A. Frost, Milton		1	..	..	strength.
79531	3- 4-10	"	H. J. Smith, Richford	Kimball Bros., Enosburg Falls	..	1	..	70 per cent. U. S. P. strength.
79577	3- 5-10	"	D. M. Janes, "		1	..	..	Conforms to U. S. P. standard.
79980	3-17-10	"	F. G. Landry, St. Johnsbury		1	..	..	
77785	1-19-10	Save the Baby Croup Specific	Evans & Bryan, Waterbury	W. W. Lee, Troy, N. Y.	1	..	..	
77786	"	Brazilian Balm	" " "	W. F. Jackson & Co., Indianapolis	..	..	1	Misleading label.
77798	"	Castor Oil	" " "		1	..	..	
79371	2-25-10	Wright's Liniment	O. G. Phelps & Co., Milton	Lake Shore Seed Co., Dunkirk, N. Y.	1	..	..	
79393	2-26-10	Miles' Blood Purifier	E. A. Frost, Milton	Miles Med. Co., Elkhart, Ind.	1	..	..	
79394	"	German Croup Remedy	" " "	Glessner Med. Co., Findlay, Ohio	..	..	1	" "
79519	3- 4-10	Cherry Kola	Cooperative Grocery, Richford	C. K. Co., Williamsport, Pa.	1	..	..	
79523	"	Roderic's Cough Balsam	" " "	Roderic Ext. Co., Portland, Me.	..	..	1	" "
78958	2-14-10	Jamaica Ginger	Direct Importing Co., Burlington		1	..	..	
79929	3-17-10	Quick Stop Headache Tablets	F. G. Landry, St. Johnsbury	Kimball Bros., Enosburg Falls	..	..	1	Acetanilid not stated.
78943	2-14-10	S. J. Lawrence Blood Purifier	J. L. Kelley, Burlington	Susan J. Lawrence, Burlington	..	..	1	Misleading label.
79578	3- 5-10	Nutt's Cough Syrup	D. M. Janes, Richford	Raymond Med. Co., Raymond, N. H.	..	..	1	Alcohol not stated.
79574	"	Pulmonary Elixir	" " "	Henry Johnson & Lord, Burlington	..	..	1	Misleading label.
79575	"	Renne's Magic Oil	" " "	L. W. Warner & Co., N. Y.	..	..	1	" "
79576	"	Big G	" " "	Evans Chemical Co., Cincinnati, O.	1	..	..	
79578	"	Tincture Iodine	" " "		..	1	..	Not U. S. P.
79380	2-26-10	Castor Oil	E. A. Frost, Milton		1	..	..	
79383	"	Tincture Iodine	" " "		1	..	..	

Total....27
Legal....15
Illegal..12

Digitized by Google

Medico-Legal Cases

Specimens Examined by Order of the Attorney General or a Superior Judge, from Jan. 1 to Mar. 31, 1910

Laboratory Number	Date Received	Date Reported	Town	Material	Examined for	Result	Ordered by	State's Attorney
			Addison County					
79227	2-22-10	3- 5-10	E. Middlebury	Autopsy	Cause of death	Corrosive poison	J. G. Sargent	L. C. Russell
79236	"	"	"	Brain	"	Negative	"	"
79237	"	"	"	Uterus and contents	Pregnancy	Positive	"	"
79238	"	"	"	Tongue and pharynx	Poison	Negative	"	"
79239	"	"	"	Esophagus	"	"	"	"
79240	"	"	"	Stomach	"	"	"	"
79241	"	"	"	Intestinal tract	"	"	"	"
79242	"	"	"	Liver and kidneys	"	"	"	"
			Chittenden County					
80804	3-26-10	4- 4-10	Burlington	Stain on paper	Blood	Negative		H. B. Shaw
77890	1-22-10	2- 4-10	Hinesburg	Body of dog	Poison	Case pending	J. G Sargent	"
80553	3-30-10	4-13-10	Shelburne Falls	Autopsy	Cause of death	Starvation	"	"
80555	"	"	" "	Stomach and intestines	" "	"	"	"
80556	"	"	" "	Kidneys	" "	"	"	"
80557	"	"	" "	Liver	" "	"	"	"
80558	"	"	" "	Brain	" "	"	"	"
			Orleans County					
78689	1-19-10	2- 3-10	Newport	Stomach of horse	Poison	Negative	E. L Waterman	W. M. Wright
			Rutland County					
77100	1- 8-10	1-15-10	Rutland	Bottle of liquid	Alcohol	Positive	J. G. Sargent	J. C. Jones
78698	2-12-10	2-19-10	"	Pants	Urine	Negative	"	"
78910	"	"	"	Drawers	"	"	"	"

Digitized by Google

DIABETIC FOODS.

The following results obtained on so-called diabetic foods are republished in response to numerous inquiries concerning the same:

BRAND AND MANUFACTURER.	TOTAL CARBOHYDRATES.
Akoll Biscuit. Huntley & Palmer, London. S. S. Pierce Co. Boston	3.47%
Atlantic Gluten Meal. The Cutler Co., No. Wilbraham, Mass.	18.38%
Casoid Biscuit, No. 1. Thos. Leeming & Co., New York City.	3.67%
Casoid Biscuit, No. 2. Thos. Leeming & Co., New York City.	0.00%
Casoid Biscuit, No. 3. Thos. Leeming & Co., New York City.	4.63%
Cresco Flour. Farwell & Rhines Co., Watertown, N. Y.	79.12%
Special Dietetic Food Flour. Farwell & Rhines Co., Watertown, N. Y.	62.04%
Gluten Flour. Farwell & Rhines Co., Watertown, N. Y.	40.70%
Roasted Cocoa Shells	11.62%
Roasted Cocoa Nibs	11.16%
Soja Bean Meal	8.95%
Almond Meal	7.18%

ICE CREAM.

Ice cream manufacturers and dealers are again reminded of the following which is the state standard:

1. *Ice cream* is a frozen product made from cream and sugar, with or without pure gelatine and a natural flavoring, and contains not less than fourteen (14) per cent of milk fat.

2. *Fruit ice cream* is the frozen product made from cream, sugar, and sound, clean, mature fruits, with or without pure gelatine and contains not less than twelve (12) per cent of milk fat.

3. *Nut ice cream* is a frozen product made from cream, sugar, and sound, non-rancid nuts, with or without pure gelatine and contains not less than twelve (12) per cent of milk fat.

Digitized by Google

NEWS ITEMS.

The Eleventh Annual School of Instruction for Health Officers will be held in the Kellogg-Hubbard Library, Montpelier, Vt., August 1 to 4 inclusive, 1910.

Every health officer and as many members of local boards of health as possible should make their plans to be present.

Citizens are invited and will find the proceedings of interest.

For the Doctors—As Others See Them.

The following is one of several letters from town clerks. Apparently there are reasons why they do not report promptly and accurately. Does this apply to you, doctor? If so report *promptly*, writing with *unfading black ink*, as your certificate remains in your town clerk's office as a permanent record.

———— Vt., November 29, 1909.

H. D. Holton,

Secretary, State Board of Health.

Dear Sir:

I find that the physicians are inclined to be careless and not fully answer the questions in the certificates of births and deaths; and also careless in their penmanship. It is often hard to make out the cause of death. I have written to all of our physicians cautioning them in these matters and hope to get complete returns.

I think if the town clerks had circular letters over your signature, directed to physicians, which the town clerk could mail to them, it would have a desired effect.

Respectfully,

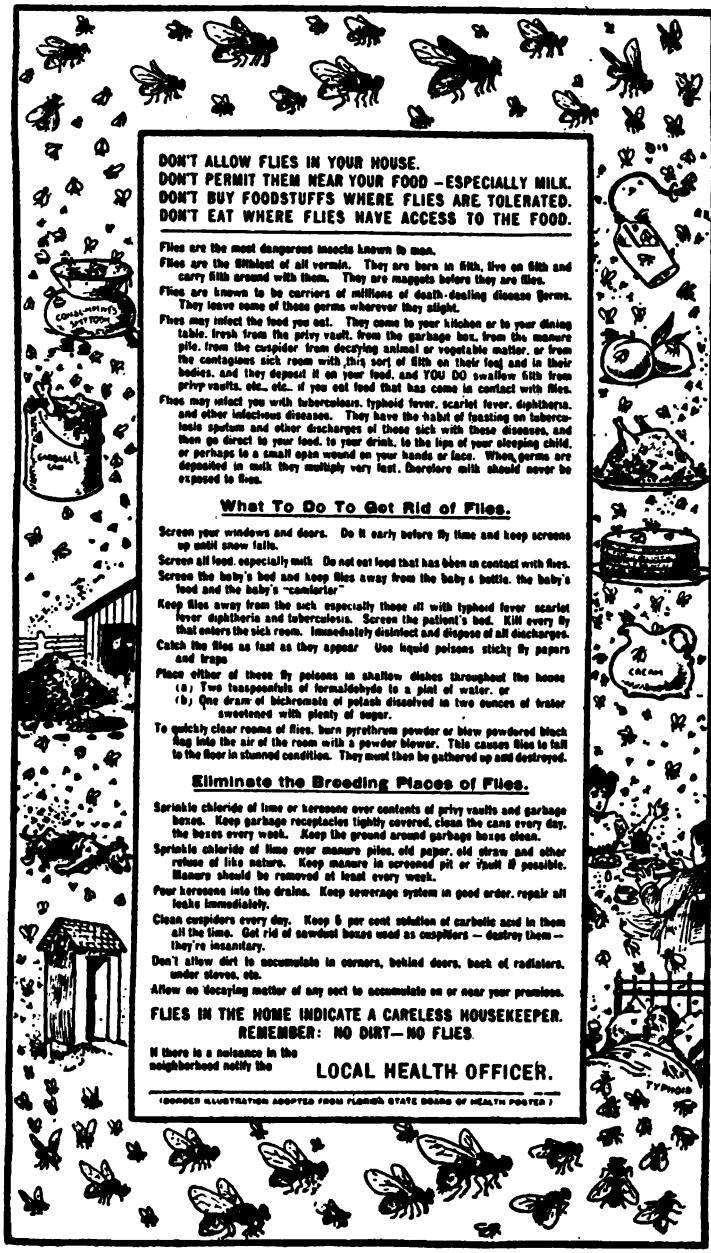
————, Town Clerk.

The Dangerous and Deadly House Fly.

The most abundant and widely distributed of pestilent insects is the common house fly (Musca domestica), constituting about 99 per cent of the various species of flies found about barns and houses. This hexapod "mixer" has about 10,000 very fine hairs on its feet, from which oil exudes constantly, enabling the fly to walk (by capillary attraction) in any position on a dry surface which is not too dusty. The house fly breeds preferably in horse manure, though at times in garbage or human feces, the full cycle of development from the egg being nine or ten days. Ritchie

Digitized by Google

SPEAKING OF FLIES!!



DON'T ALLOW FLIES IN YOUR HOUSE.
DON'T PERMIT THEM NEAR YOUR FOOD – ESPECIALLY MILK.
DON'T BUY FOODSTUFFS WHERE FLIES ARE TOLERATED.
DON'T EAT WHERE FLIES HAVE ACCESS TO THE FOOD.

Flies are the most dangerous insects known to man.

Flies are the filthiest of all vermin. They are born in filth, live on filth and carry filth around with them. They are maggots before they are flies.

Flies are known to be carriers of millions of death-dealing disease germs. They leave some of these germs wherever they alight.

Flies may infect the food you eat. They come to your kitchen or to your dining table, fresh from the privy vault, from the garbage box, from the manure pile, from the cuspidor from decaying animal or vegetable matter, or from the contagious sick room with this sort of filth on their feet and in their bodies, and they deposit it on your food, and YOU DO swallow filth from privy vaults, etc., etc., if you eat food that has come in contact with flies.

Flies may infect you with tuberculosis, typhoid fever, scarlet fever, diphtheria, and other infectious diseases. They have the habit of feasting on tuberculosis sputum and other discharges of those sick with these diseases, and then go direct to your food, to your drink, to the lips of your sleeping child, or perhaps to a small open wound on your hands or face. When germs are deposited in milk they multiply very fast. Therefore milk should never be exposed to flies.

What To Do To Get Rid of Flies.

Screen your windows and doors. Do it early before fly time and keep screens up until snow falls.

Screen all food, especially milk. Do not eat food that has been in contact with flies.

Screen the baby's bed and keep flies away from the baby's bottle, the baby's food and the baby's "comforter"

Keep flies away from the sick especially those ill with typhoid fever scarlet fever diphtheria and tuberculosis. Screen the patient's bed. Kill every fly that enters the sick room. Immediately disinfect and dispose of all discharges.

Catch the flies as fast as they appear. Use liquid poisons, sticky fly papers and traps.

Place either of these fly poisons in shallow dishes throughout the house
(a) Two teaspoonfuls of formaldehyde to a pint of water, or
(b) One dram of bichromate of potash dissolved in two ounces of water sweetened with plenty of sugar.

To quickly clear rooms of flies, burn pyrethrum powder or blow powdered black flag into the air of the room with a powder blower. This causes flies to fall to the floor in stunned condition. They must then be gathered up and destroyed.

Eliminate the Breeding Places of Flies.

Sprinkle chloride of lime or kerosene over contents of privy vaults and garbage boxes. Keep garbage receptacles tightly covered, clean the cans every day, the boxes every week. Keep the ground around garbage boxes clean.

Sprinkle chloride of lime over manure piles, old paper, old straw and other refuse of like nature. Keep manure in screened pit or vault if possible. Manure should be removed at least every week.

Pour kerosene into the drains. Keep sewerage system in good order, repair all leaks immediately.

Clean cuspidors every day. Keep 5 per cent solution of carbolic acid in them all the time. Get rid of sawdust boxes used as cuspidors – destroy them – they're insanitary.

Don't allow dirt to accumulate in corners, behind doors, back of radiators, under stoves, etc.

Allow no decaying matter of any sort to accumulate on or near your premises.

FLIES IN THE HOME INDICATE A CARELESS HOUSEKEEPER.
REMEMBER: NO DIRT – NO FLIES

If there is a nuisance in the neighborhood notify the **LOCAL HEALTH OFFICER.**

(BORDER ILLUSTRATION ADOPTED FROM FLORIDA STATE BOARD OF HEALTH POSTER)

Digitized by Google

says it is estimated that in one summer 300 flies may hatch in a cubic inch of manure, if this is left undisturbed.

The hairy nature of its feet makes the fly an unrivaled carrier of filth and contagion, and as many as 10,000 bacteria have been found upon a single fly. Among the germs which have been thus isolated in pure culture, we may mention: A. typhi abdominalis, B. coli, bubonicæ, pyogenic micro-organisms and the eggs of most of the intestinal parasites. Microbes are carried mostly upon the legs of the insect, but are likewise deposited in its feces and may be liberated by the dry decay of dead flies. In one speck left by a fly that had been captured on the face of a leper, says Ritchie, 1115 leprosy germs were counted.

To diminish and destroy what may be termed the Fly Peril, there are three main principles to follow: 1. Remove the first cause by having manure removed every week (before maggots have time to develop into flies), or if this is impracticable, keep it carefully covered in a closed box (using chlorinated lime as a disinfectant) or screened with wire gauze. Garbage should be protected in the same way, when it cannot be burned or fed to chickens or pigs. 2. Prevent entrance of flies into house and contact with foods and drinks, by well-fitting screens for doors and windows and the quick storing of viands in refrigerator and cupboards; also a netting for the helpless sleeping baby. 3. Kill every fly on sight, if you can, with a wire "killer," dilute formalin (renewed every day) on a plate, or sticky fly paper, the black fly paper should not be used where there are little children, as it is very poisonous. The absence of flies, like the presence of soap, should be considered a true index of civilization.

A SANE AND SAFE FOURTH.

For several years we have annually called the attention of the public to the dangers attending the explosives used to "celebrate" July 4. The number of fatal injuries resulting from giant crackers, toy pistols and other explosives has annually exceeded that of many historical battles. The noise attending this form of celebration has a disastrous effect upon many cases of illness. We trust the agitation that is going on for a more sane and quiet observance of this holiday will be successful. However, should the slightest injury be done to any one, no matter how trivial it appears, call a surgeon at once. A proper dressing of the wound may prevent tetanus or other serious results.

In many cities serious consideration is being given to the abolition of explosives and in the adoption of as interesting but less dangerous amusements. We would urge upon all a careful consideration of this subject.

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

BOUND

JUN 25

UNIV. OF MICH.
LIBRARY

UNIVERSITY OF MICHIGAN
3 9015 06860 1585

Digitized by Google

Digitized by Google